UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, MD 20910

THE DIRECTOR

DEC 8 1999

MEMORANDUM FOR: Susan Fruchter
NEPA Coordinator
Office of Policy & Strategic Planning

FROM: Penelope D. Dalton Penelope D. Dalton

SUBJECT: Transmittal of the Environmental Assessment of the Interim Final Rule Regarding the Taking of Marine Mammals Incidental to Commercial Fishing Operations Specifically in the Tuna Purse Seine Vessels in the Eastern Tropical Pacific Ocean--DECISION MEMORANDUM

Based on the subject attached environmental assessment, I have determined that no significant environmental impacts will result from the interim final rule. I request your concurrence in this determination by signing below. Please return this memorandum for our files.

1. I concur.

Susan Fruchter 12/13/99
Date

2. I do not concur.

_____
Date

Attachments

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

DEC 13 1999

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act, an environmental review has been performed on the following action.

TITLE: Environmental Assessment of Interim Final Rule to Implement the International Dolphin Conservation Program Act (P.l. 105-42) and Regulatory Impact Review

SUMMARY: This interim final rule implements the International Dolphin Conservation Protection Act (IDCPA) through: (1) restrictions on U.S. purse seine vessels fishing in the eastern tropical Pacific Ocean (ETP); (2) establishment of labeling standards for tuna caught in the ETP and labeled as dolphin-safe; (3) relief of current market restrictions on the sale of non-dolphin-safe tuna in the United States; (4) establishment of a tracking and verification system to track dolphin-safe tuna from capture in the ETP to final sale; and (5) abolishment of the current comparability standards applied to other ETP harvesting nations and establishment of new standards for importing yellowfin tuna caught in the ETP into the United States. These regulations would allow the importation of yellowfin tuna that would otherwise be under embargo from nations in compliance with the International Dolphin Conservation Program (IDCP) and would allow U.S. vessels to participate in the yellowfin tuna fishery in the ETP. Such acts would not significantly affect the quality of the human environment.

RESPONSIBLE OFFICIAL:
Penelope D. Dalton
Assistant Administrator for Fisheries
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East West Highway
Silver Spring, Maryland 20910
Phone: 301/713-2239

The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact, including the environmental assessment, is enclosed for your information. Also, please send one copy of your comment to me in Room 5805,

OPSP, U.S. Department of Commerce, Washington, D.C., 20230.

Sincerely,

Susan Fruchter

Susan Fruchter
NEPA Coordinator
Office of Policy & Strategic Planning

Enclosures

OPSP, U.S. Department of Commerce, Washington, D.C., 20230.

Sincerely,

Susan Fruchter

Susan Fruchter
NEPA Coordinator
Office of Policy & Strategic Planning

Enclosures

ENVIRONMENTAL ASSESSMENT OF INTERIM FINAL RULE TO IMPLEMENT THE INTERNATIONAL DOLPHIN CONSERVATION PROGRAM ACT (P.L. 105-42) AND REGULATORY IMPACT REVIEW

Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Protected Resources
October 1999

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Environmental Assessment of Interim Final Rule to Implement the International Dolphin Conservation Program Act (P.L. 105-42) and Regulatory Impact Review

1.0 INTRODUCTION

The National Marine Fisheries Service (NMFS) is promulgating regulations to implement provisions of the International Dolphin Conservation Program Act (IDCPA). These regulations will allow the entry of yellowfin tuna into the United States under certain conditions from nations signatory to the International Dolphin Conservation Program (IDCP). It will also allow U.S. fishing vessels to participate in the fishery in the eastern tropical Pacific Ocean (ETP) on equivalent terms with the flag vessels of other IDCP signatory nations. A U.S. citizen employed on a purse seine vessel, of another IDCP signatory nation, will not be in violation of U.S. prohibitions on the taking of marine mammals if that vessel takes marine mammals incidentally during fishing operations outside the U.S. exclusive economic zone (EEZ) in compliance with the requirements of the IDCP. The standard for use of dolphin-safe labels for tuna products will also change. General requirements also are established to ensure adequate tracking and verification of tuna imports from the ETP tuna fishery.

1.1 Purpose and Need

In order to implement the provisions of the IDCPA, NMFS must amend 50 Part 216 of the Code of Federal Regulations (CFR) which governs the taking and importing of marine mammals. The National Environmental Policy Act (NEPA) requires federal agencies to evaluate the impacts of federal actions on the human environment. Because NMFS is promulgating a regulation, it must prepare an environmental assessment (EA) to determine whether the impacts of such a regulation would have significant impacts on the human environment.

1.2 Background

1.2.1 The Marine Mammal Protection Act: Early Regulations

Purse seine tuna fishing in the ETP involves setting on pure schools of tuna, tuna associated with floating objects, and tuna associated with marine mammals. In the late 1950s, fishermen became aware of the close association between schools of dolphins and large yellowfin tuna (over 25 kilograms), and used the knowledge of this association to place their nets around schools of dolphins, which are relatively easy to locate, in order to catch the associated tuna. In the 1960s, purse seining replaced pole fishing as the predominant fishing gear in this fishery. Fishermen continued to locate tuna by searching for dolphins and setting their nets around schools of dolphins to capture the tuna swimming below. Studies began in 1971 to estimate the incidental dolphin mortality caused by U.S. and foreign yellowfin tuna purse seine vessels in the ETP. At that time, the ETP fishery was dominated by U.S. vessels and the level of annual dolphin

mortality was estimated to be over 350,000 dolphins. With enactment of the Marine Mammal Protection Act (MMPA) in 1972, incidental mortality from fishing by the U.S. domestic fleet began to decline, but participation in the fishery by foreign vessels began to increase. Although the U.S. industry was instrumental in developing gear for reducing mortality and adopting procedures for releasing animals, foreign vessels were not subject to the requirements of the MMPA, and dolphin mortality associated with fishing by the foreign fleet began to rise as their participation grew in the ETP.

To address concerns regarding increased dolphin mortality by foreign vessels, Congress amended the MMPA in 1984 to tighten the importation requirements for fish and fish products harvested by foreign tuna vessels in the ETP. These amendments required nations which export yellowfin tuna to the United States to have in place a regulatory program for marine mammal protection and incidental mortality limits for dolphins in the yellowfin tuna fishery comparable to that of the United States. The 1984 amendments also set ETP annual mortality limits for the U.S. fleet of 250 coastal spotted dolphins and 2,750 eastern spinner dolphins, with an overall cap for all species of 20,000 dolphins.

In 1988, Congress again amended the MMPA in response to continued high dolphin mortality caused by foreign vessels fishing in the ETP. Estimated mortality incidental to foreign fishing effort was over 85,000 dolphins in 1987, while mortality incidental to the U.S. fishing effort was under 14,000 dolphins for that same year. By imposing the following additional requirements on domestic and foreign tuna fishermen, Congress expected that overall mortality would decrease. With regard to the U.S. fleet, the 1988 amendments specified that U.S. tuna fishermen setting on marine mammals must complete the process of backdown to remove dolphins from the net no later than 30 minutes after sundown. In addition, all U.S. tuna boats were required to carry an observer on every fishing trip, and a system of performance standards designed to maintain the diligence and proficiency of tuna purse seine skippers was to be developed and implemented by 1990. The 1988 amendments also provided more specific direction as to determining the comparability of foreign dolphin protection programs. Under the amendments, in order to be found comparable to the U.S. program, a foreign program was required to include by the beginning of the 1990 fishing season: 1) prohibitions on conducting sundown sets and such other activities as were applicable to U.S. vessels; 2) monitoring by observers; and 3) observer coverage equivalent to that for U.S. vessels. In addition, the average rate of incidental take for a foreign fleet was to be no more than twice that of the U.S. fleet by the end of the 1989 season and no more than 1.25 times the U.S. rate by the end of 1990 and in subsequent seasons. The amendments also placed additional limits on the take of coastal spotted and eastern spinner dolphins. Lastly, the 1988 amendments added Pelly certification to the embargo process for those nations not meeting the comparability requirements of the MMPA. The embargoes that have resulted from MMPA requirements have been challenged by other countries as being inconsistent with the General Agreement on Tariffs and Trade, although no resolution of these challenges has been forthcoming.

1.2.2 The Dolphin Protection Consumer Information Act (1990) and The International Dolphin Conservation Act (1992)

In 1990, Congress passed the Dolphin Protection Consumer Information Act (DPCIA). The DPCIA required that tuna labeled as "dolphin-safe" meet certain dolphin-safe criteria: only tuna harvested in the ETP on a trip where no dolphins were encircled at any time on the entire trip could be labeled as being dolphin-safe. The DPCIA did not actually require dolphin-safe labeling, but during the same time period, U.S. tuna canners instituted a voluntary dolphin-safe tuna campaign under which they purchased only dolphin-safe tuna for introduction into the U.S. market.

The International Dolphin Conservation Act (IDCA) was passed in 1992. The goal of the IDCA was to establish an international moratorium on the practice of harvesting tuna through the use of purse seine nets deployed on or to encircle dolphins or other marine mammals. The United States, however, was unsuccessful in convincing any other nation to commit to the moratorium. In 1992 only seven U.S. vessels were active in the dolphin-safe fishery because most of the fleet had transferred to the western Pacific fishing grounds. Nevertheless, the IDCA established limits on dolphin mortality by U.S. fishing vessels and required that the number of dolphins killed or seriously injured decrease from one year to the next. Estimated U.S. dolphin mortality decreased from 19,712 in 1988, to 1,004 in 1991, to less than 500 in 1992, and to 115 animals in 1993. When the incidental dolphin mortality approached 115 animals in 1994, the U.S. ETP yellowfin tuna fishery on dolphin was closed as early as February 8, 1994. The IDCA also prohibited U.S. citizens from encircling marine mammals and made it unlawful for any person to sell other than dolphin-safe tuna in the United States after June 1, 1994. Foreign participation in the ETP fishery continued to increase. However, this mortality was monitored and limited under a voluntary international dolphin conservation program organized by the Inter-American Tropical Tuna Commission (IATTC).

1.2.3 The La Jolla Agreement (1992) and the Panama Declaration (1995)

In 1992, nations with tuna fishing interests in the ETP, including the United States, adopted a non-binding multilateral program known as the La Jolla Agreement. The La Jolla Agreement established a dolphin mortality reduction schedule providing for progressive reductions in annual dolphin mortalities, with a goal of eliminating dolphin mortality in the fishery. By resolution, the IATTC, to which the United States is a party, adopted this agreement. By 1993, nations fishing in the ETP under the La Jolla Agreement reduced dolphin mortality to less than 5,000 dolphins annually, six years ahead of the reduction schedule established in that agreement. The success of the La Jolla Agreement led the United States and other nations that participated in the agreement to strengthen and enhance the program by developing a legally binding, formal international agreement.

In October 1995, the governments of Belize, Colombia, Costa Rica, Ecuador, Honduras, Mexico, Panama, Spain, the United States, Vanuatu, and Venezuela signed the Panama Declaration. The

Panama Declaration established conservative species/stock-specific annual dolphin mortality limits and represented an important step toward reducing bycatch in ETP tuna fisheries and implementing sound ecosystem management. The Panama Declaration anticipated that the United States would change the provisions of the MMPA to allow the United States to import yellowfin tuna from nations that are participating in, and are in compliance with, the IDCP.

1.2.4 The International Dolphin Conservation Program Act (1997) and The Agreement on the International Dolphin Conservation Program (1998)

Congress considered several bills to implement the Panama Declaration, ultimately passing the International Dolphin Conservation Program Act (IDCPA) (Public Law (P.L.) 105-42). The IDCPA was signed into law on August 15, 1997. The IDCPA was the domestic endorsement of the La Jolla Agreement, incorporating elements of the Panama Declaration, adopted under the auspices of the IATTC. The IDCPA provides the basis for the allowing the entry of yellowfin tuna into the United States under certain conditions from nations complying with the IDCP. The IDCPA also allows U.S. fishing vessels to participate in the ETP yellowfin tuna fishery on dolphin. In addition, a U.S. citizen employed on a purse seine vessel of another IDCP nation signatory would not be in violation of the U.S. prohibitions on the taking of marine mammals if that vessel takes marine mammals incidentally during fishing operations outside of the U.S. EEZ and in compliance with the requirements of the IDCP. Also, under the IDCPA, the definition of dolphin-safe tuna will change. Specifically, tuna harvested in a set with no observed dolphin mortality or seriously injury will be considered dolphin-safe, regardless of whether the set intentionally encircled dolphins to catch tuna. The IDCPA ensures adequate tracking and verification of tuna imported from the ETP. Key provisions of the IDCPA will become effective when two certifications are made. The Secretary of State must certify to Congress that a binding legal instrument establishing the IDCP (Agreement on the IDCP) has been adopted and is in force. In addition, the Secretary of Commerce must certify that research has begun on the effects of intentional chase and encirclement on dolphins and dolphin stocks incidentally taken in the course of purse seine fishing for yellowfin tuna in the ETP, and that funds are available to complete the first year of the study. On July 27, 1998, the Secretary of Commerce provided the required certification to Congress on the research study.

The IDCPA, together with the Panama Declaration, became the blue print for the Agreement on the IDCP. In May 1998, eight nations, including the United States, signed a binding, international agreement to implement the IDCP. The Agreement on the IDCP became effective on February 15, 1999 when, as required, four nations (i.e. the United States, Panama, Ecuador, and Mexico) had deposited their instruments of either ratification, acceptance, or adherence with the Depositary. On March 3, 1999, the Secretary of State provided the required certification to Congress that the Agreement on the IDCP was adopted and in force. The IDCPA became effective on that date.

1.3 Objective of the Interim final rule

The objective of the interim final rule is to implement the IDCPA, which is intended:

1. To provide protection for dolphins;
2. To enhance the conservation of yellowfin tuna and other living marine resources in the ETP ecosystem;
3. To allow nations that are participating in, and in compliance with, the IDCP to export yellowfin tuna into the United States;
4. To allow U.S. vessels to participate in the ETP fishery on an equal basis with vessels of other nations; and
5. To recognize that nations fishing for tuna in the ETP have achieved significant reductions in dolphin mortality associated with this fishery.

2.0 ALTERNATIVES

Because the interim final rule is implementing a statutory mandate to meet commitments in an international agreement with many specific required elements, the alternatives available are limited. The preferred alternative contains a combination of provisions concerning: (1) restrictions for U.S. vessels; (2) labeling standards for dolphin-safe tuna; (3) market restrictions; (4) embargoes; and (5) tracking and verification. The principal alternative against which the preferred alternative will be evaluated is the "status quo" alternative (i.e., a continuation of current fishing patterns under existing regulations and the voluntary international program for the conservation of dolphins).

The status quo alternative is presented principally to provide a benchmark against which to contrast conditions expected with the proposed actions. In most respects, the status quo alternative is not a "reasonable alternative" because of the requirements of the IDCPA. That is, maintaining the status quo would not meet the requirements of the statute and the international commitments of the United States under the new Agreement on the IDCP.

The impact analysis looks at three "combinations" of actions: the status quo, the preferred alternative, and an alternative (Alternative 3) which represents an adjustment of discretionary aspects of the preferred alternative. NMFS acknowledges that, within each category of actions (e.g., restriction of the U.S. fleet) there may be measures that are possible within different interpretations of the requirements of the IDCPA. There also may be measures that are possible in addition to the IDCPA requirements; these might be reasonable under the MMPA and further the purposes of the IDCPA even though they are not specifically identified in the IDCPA as necessary or required. Alternative 3 was developed to encompass some of these possible variations.

Emphasis must be made, however, on the fact that it is very difficult, if not impossible, to independently evaluate and portray the likely impacts of each specific possible alternative action in each of the categories of actions, for two reasons. First, actions in the categories of labeling, trade restrictions and embargoes work together, not independently. They are intended to

reinforce each other and should be viewed as interdependent parts of an overall strategy to carry out the IDCPA. Second, the analysis would be extremely difficult for reviewers if this EA tried to portray the impacts of separate actions independently. That is, if there are five categories of actions and only two alternatives in each category, then there could be 32 different "combinations" of actions (2 to the fifth power). With 10 impact categories (e.g. marine mammals, sea turtles, etc.), there would be 320 separate sections in which impacts would be described. This would be enormously unwieldy for the reviewer. NMFS believes that taking the approach of looking at combinations is a more constructive way to present the relevant information. Reviewers can still focus on separate action categories and propose consideration of variations in each if they so choose.

In addition, during the development of the preferred action, NMFS attempted to identify possible alternative actions that might (though not necessarily would) contribute to effective achievement of the objectives of the regulations. Initial evaluation of these possible measures led to their rejection for the reasons presented in section 2.4, and detailed evaluations were not conducted. Generally, these alternatives were rejected because they were not within the legal requirements of the IDCPA or they were not reasonable due to cost or impracticability.

2.1 Alternative 1: Status Quo - No New Requirements

Under this alternative, the status quo, existing regulations would remain in place and activities would continue under the voluntary IDCP. A summary of these provisions follows.

2.1.1 Restrictions for U.S. Vessels

Under the status quo alternative, all U.S. vessels would be prohibited from intentionally setting their nets on dolphins to catch tuna. Any U.S. purse seine vessel larger than 363 metric tons (mt) (400 short tons (st)) would be required to carry observers and meet other existing gear and operational and reporting requirements when fishing in the ETP.

2.1.2 Labeling

Under the status quo alternative, the definition of dolphin-safe tuna would not be changed. The dolphin-safe label would only be used on tuna caught by a vessel that did not set on dolphins throughout its entire trip. Any fish taken in non-dolphin sets (school set, log/fish aggregating device (FAD) set) that resulted in an accidential dolphin death would still be labeled "dolphin-safe." Currently, most U.S. and foreign tuna canners have developed their own unique mark to place on their tuna can label to indicate that it is dolphin-safe. There is no official mark used to distinguish cans of dolphin-safe tuna.

2.1.3 Market restrictions

Under the status quo alternative, the prohibition of the sale, purchase, offering for sale,

transportation, or shipment of non-dolphin-safe tuna in the United States would remain in place.

2.1.4 Embargoes

Nations whose vessels set on dolphins to catch tuna at any time during a trip would not be able to export their tuna to the United States. Existing trade embargoes for yellowfin tuna would remain in effect for nations which did not receive an affirmative finding under the IDCP or which did not meet the "comparability standards" (i.e. institute marine mammal protection standards comparable to the United States) while purse seine fishing for tuna in the ETP.

2.1.5 Tuna tracking and verification

The current tracking and verification system, which relies primarily on the Fisheries Certificate of Origin (FCO) to track non-fresh tuna exported into the United States, would continue. The vessel name is required on the FCO for ETP harvests, but the name is not required on the FCO for non-ETP harvests.

2.2 Alternative 2: Interim final rule (Preferred Alternative)

The preferred alternative would establish a number of new requirements.

2.2.1 Restrictions for U.S. vessels

United States fishing vessels would be permitted to fish for tuna in the ETP on equivalent terms with the flag vessels of other IDCP signatory nations. For example, a U.S. purse seine fishing vessel over 363 mt carrying capacity with a valid permit would be allowed to deploy a net on or encircle dolphins in the course of tuna fishing in the ETP. Any such vessel would have to comply with all requirements regarding gear and fishing procedures. However, a U.S. purse seine fishing vessel of 363 mt carrying capacity or less would not be allowed to set on dolphins in the ETP under this proposed alternative. This would include vessels that once had a rated capacity greater than 363 mt but, because of modifications to wells to limit capacity, have not since landed more than 363 mt of fish at any one time and now have an effective carrying capacity less than 363 mt. The preferred alternative would not change the existing regulations, which require that the backdown procedure be completed no later than one-half hour *after* sundown, consistent with the Agreement on the IDCP. The IDCPA (apparently due to a typographical error), states that backdown procedures must be completed no later than one-half hour *before* sundown. Existing dolphin stock and species protections would be replaced with a provision prohibiting sets on a stock when the dolphin mortality limit for that stock has been reached or exceeded. A U.S. citizen employed on a purse seine vessel of another IDCP signatory nation with an affirmative finding would not be in violation of U.S. prohibitions on the taking of marine mammals if that vessel takes marine mammals incidentally during fishing operations outside of the EEZ in compliance the requirements of the IDCP.

2.2.2 Standards for "Dolphin-safe Tuna" Labeling

The preferred alternative would revise the current labeling standard, based on the initial and final findings of a study mandated by the IDCPA on whether the intentional deployment on or encirclement of dolphins with purse seine nets has a "significant adverse impact" on any depleted dolphin stocks in the ETP. Dolphin stocks in the ETP now designated as depleted under the MMPA are the eastern spinner and the northeastern offshore spotted dolphins. The coastal spotted dolphin has been afforded special protection since 1980 (section 3.2.2). NMFS has decided to factor the coastal spotted dolphin into its initial and final findings on the effects of chase and encirclement. The initial finding was due between March 1, 1999, and March 31, 1999, and the final finding is due between July 1, 2001, and December 31, 2002. On April 29, 1999, NMFS made the initial finding as required by the IDCPA. NMFS found that there was insufficient evidence that chase and encirclement by the tuna purse seine fishery "is having a significant adverse impact" on depleted dolphin stocks in the ETP. Based on this initial finding, and effective on the effective date of the interim final rule to implement the IDCPA, the Assistant Administrator will apply the definition of "dolphin- safe," specified in paragraph (h)(1) of the DCPIA (i.e. no dolphins were killed or seriously injured during the sets in which tuna were caught). Similarly, if the Secretary's *final* finding, due by December 31, 2002, concludes that a significant adverse impact is either not occurring or has not been detected, the definition of "dolphin-safe" under paragraph (h)(1) of the DPCIA will apply. However, if the Secretary finds a "significant adverse impact," the definition of "dolphin-safe" under paragraph (h)(2) of the DPCIA would apply (i.e. no tuna were caught on a fishing trip in which such tuna were harvested using a purse seine net intentionally deployed on or to encircle dolphins, and no dolphins were killed or seriously injured during the sets in which the tuna were caught).

The DPCIA, as revised by the IDCPA, requires the Secretary to *develop* an official mark that can be used to indicate a tuna product is dolphin-safe. The official mark designation (i.e., logo) will be made in a later rulemaking, and the interim final rule (preferred alternative) will only "reserve" 50 CFR 216.96 as the section of the regulations that NMFS will use in the future to describe the official mark.

2.2.3 Market restrictions

As mandated by section 6(d) of the IDCPA, the preferred alternative would exclude yellowfin tuna and yellowfin tuna products harvested by vessels of a nation which is in compliance with the IDCP, and which has also met the IATTC application and membership requirements specified in the IDCPA, from the prohibition on the sale, purchase, offer for sale, transport or shipment of tuna products in the United States which is not dolphin-safe.

2.2.4 Embargoes

The preferred alternative would abolish the marine mammal comparability standards currently in place. Under this alternative, any harvesting nation would be subject to an ETP embargo unless

it provided NMFS with documentary evidence that it: (1) participates in the IDCP; (2) is a member or applicant member of, and meeting the financial obligations of membership in, the IATTC; (3) keeps its fleet's stock-specific mortality within the IDCP's prescribed limits; and (4) keeps its fleet's annual dolphin mortality within the aggregate DMLs assigned to its fleet. The first two items are explicit in the IDCPA, but the third item does not have much relevance unless and until the IDCP nations allocate per-stock mortality limits among nations. The fourth item is NMFS' proposed interpretation of 101(a)(2)(B)(iii) of the MMPA as revised by the IDCPA: "... the total mortality limits ... permitted for that nation's vessels under the [IDCP] do not exceed the limits determined for 1997, or for any year thereafter..." Thus, under the preferred alternative, if the combined dolphin mortality of a nation's vessels in a calendar year exceeds the combined dolphin mortality limits assigned to that nation's fleet for that year by the IDCP, the United States would impose an ETP embargo against that nation for the subsequent April through March period.

The proposed interpretation contained in this alternative makes the most sense in the context of section 101(a)(2)(B) because it focuses on a nation's compliance with the international regime. Only tuna from a nation that failed to keep its own fleet within its assigned DML would be embargoed. The documentation required in section 101(a)(2)(B) is the type of documentary evidence that the United States would not necessarily have without a submission from the harvesting nation. In the embargo context, this interpretation focuses our attention on a fleet's results in protecting dolphins, which should reflect on the harvesting nation's management and enforcement program, rather than decisions by other parties to the IDCP. This encourages other harvesting nations to be "good" players in the IDCP, and threatens economic sanctions only against "bad" players that cannot control or manage their own fleets.

The interim final rule specifies that an embargo would not be imposed if the dolphin mortality limits were exceeded if the country is addressing this matter as provided for under the Agreement. However, the IDCPA does not explicitly allow for such flexibility. To incorporate such flexibility, the interim final rule does not automatically impose embargos on nations when its fleet's dolphin mortality limits are exceeded, as long as the country is immediately addressing this matter as provided for under the Agreement (e.g., the nation promptly prohibits its fleet from further dolphin fishing for the remainder of the year). As a result, extraordinary circumstances that are beyond the control of the nation or vessel, will be accommodated. This flexibility will encourage harvesting nations to comply with the Agreement, but will threaten economic sanctions against nations that do not control or manage their own fleets. Without this flexibility, nations that were otherwise fully implementing the Agreement would be embargoed if their dolphin mortality limits were exceeded, even by one dolphin.

Although currently the IDCP does not assign per-stock dolphin mortality limits to individual nations, fleets, or vessels, if the program assigns per-stock limits in the future, NMFS would compare the total per-stock dolphin mortality of a harvesting nation's fleet in a calendar year to the combined allocated annual per-stock mortality limits assigned to the fleet for that year. If the mortality exceed the assigned limits, the United States would impose an ETP embargo against

that nation for the subsequent April through March period. An embargo would not be imposed as long as the country is immediately addressing this matter as provided for under the Agreement (e.g., the nation promptly prohibits its fleet from further dolphin fishing for the remainder of the year).

2.2.5 Tuna tracking and verification

The preferred alternative would establish a domestic tracking and verification program to accurately document the dolphin-safe condition of tuna as it is fished, processed, and sold to wholesale and retail markets in the United States and throughout the world. The tracking program would include procedures and reports for use when importing tuna into the United States and during U.S. purse seine fishing, processing, and marketing in the United States and abroad. Verification of tracking system operations would be attained through the establishment of audit and document review requirements.

The proposed domestic tracking and verification program would provide for effective tracking of tuna harvested from the ETP by U.S. vessels and by foreign vessels when their catch is imported into the U.S. The proposed program would allow U.S. inspectors to track tuna caught by U.S. purse seine vessels in the ETP from capture, to well, to processing, to final sale, and thus confirm which tuna was dolphin-safe and which tuna was non-dolphin-safe.

The fishing vessel observer would designate each well into which tuna is loaded as either "dolphin-safe," "non-dolphin-safe," or "mixed." The vast majority of wells are expected to be either dolphin-safe or non-dolphin-safe. Mixed wells should be a rare occurrence. After the labeling standard change on April 29, 1999, the observer would designate a well non-dolphin-safe if tuna loaded into the well was harvested during a set in which a dolphin died or was seriously injured. The observer would designate a well dolphin-safe if all tuna loaded into that well was harvested during sets in which no dolphin died or was seriously injured.

If a well that contains dolphin-safe tuna and that has been designated dolphin-safe by the observer is later inadvertently loaded with tuna that was harvested during a set in which a dead or seriously injured dolphin was discovered late in the loading process, that well would be designated "mixed." The observer would deduct fifteen per cent of the previously recorded approximate weight of the dolphin-safe tuna in the well to serve as a buffer between the dolphin safe and non-dolphin safe tuna stored in the same well. Subsequently, only non-dolphin-safe tuna could be loaded into that well.

2.3 Alternative 3: Adjustments to the Preferred Alternative

Generally, the requirements contained in the IDCPA are clear; however, there are some provisions in the IDCPA where agency discretion may exist, either in interpreting the intent of the statute or in implementing the statute. For example, the IDCPA is generally very clear about the limitations applicable to U.S. vessels and most of the requirements pertaining to embargoes.

Nevertheless, there are other possible interpretations of the language dealing with DMLs, labeling, and tuna tracking and verification. Alternative 3 would retain the clearly required elements of the preferred alternative, but it would also include other measures (described below) not specifically required by the IDCPA or the Agreement on the IDCP.

2.3.1 Restrictions for U.S. vessels

Alternative 3 would retain all of the restrictions applicable to U.S. vessels under the preferred alternative (see section 2.2.1 of this EA), except for the time of day required to finish backdown procedures within the U.S. fleet. The preferred alternative would require that the backdown procedure be completed no later than one-half hour after sundown, consistent with the Agreement on the IDCP. In contrast, under Alternative 3, U.S. purse seiners would be prohibited from backdown procedures one-half hour before sundown. This interpretation would be consistent with the IDCPA (apparently due to a drafting error), which states that backdown procedures must be completed no later than one-half hour before sundown.

2.3.2 Standards for "dolphin-safe tuna" labeling

Alternative 3 would maintain the identical standards for official and alternative marks as required under the preferred alternative (see section 2.2.2 of this EA), unless NMFS makes a "finding of significant adverse impact." If NMFS makes such a finding, the following standards would apply to the official mark: (i) no dolphins were intentionally encircled to catch tuna during the entire trip, and no dolphins were killed or seriously injured during the set in which the tuna were caught; (ii) the mark is supported by a tracking and verification program comparable in effectiveness to the program established by NMFS regulations; and (iii) the mark comports with applicable laws and regulations of the Federal Trade Commission. The standards for the alternative mark would remain unchanged regardless of NMFS findings on the impacts of chasing and encircling dolphin or depleted dolphin stocks.

2.3.3 Embargoes

Under the preferred alternative, any harvesting nation would be subject to an ETP embargo unless it provided NMFS with documentary evidence that it: (1) participates in the IDCP; (2) is a member or applicant member of, and meeting the financial obligations of membership in, the IATTC; (3) keeps its fleet's stock-specific mortality within the IDCP's prescribed limits; and (4) keeps its fleet's annual dolphin mortality within the aggregate DMLs assigned to the fleet (see section 2.2.4 of this EA). Since the first two items are explicit in the IDCPA and the third item does not have much relevance unless and until the IDCP nations allocate per-stock mortality limits amoung nations, Alternative 3 would retain these three requirements. However, the fourth item described in the preferred alternative is NMFS' proposed interpretation of section 101(a)(2)(B)(iii) of the MMPA as revised by the IDCPA. Since NMFS considered three different interpretations of section 101(a)(2)(B)(iii), Alternative 3 includes these variations based on differing interpretations of Congress' intent of this section.

2.3.3.1 National Aggregate DMLs For Upcoming Year Do Not Exceed National Aggregate DMLs in 1997 or Subsequent Years

Under this version, the aggregate of the DMLs assigned to each of the harvesting nation's vessels ("fleet DML") for the upcoming year could not exceed the nation's fleet DML in 1997 or in subsequent years. Any harvesting nation would be subject to an ETP embargo unless the nation provided NMFS with documentary evidence that it met requirements (1) through (3) (described in section 2.2.4 of this EA), and that the aggregate of the DMLs assigned to each of the harvesting nation's vessels ("fleet DML") for the upcoming year would not exceed the nation's fleet DML in 1997 or in subsequent years. For instance, a nation could fish in strict compliance with the program but would be embargoed by the United States if its fleet happened to be relatively large in the upcoming year and therefore received a relatively large aggregate (fleet) DML. This alternative is one interpretation of the wording of section 101(a)(2)(B)(iii): "the total dolphin mortality limits . . . for that nation's vessels . . . do not exceed the limits determined for 1997, or for any year thereafter . . ."

2.3.3.2 Overall DMLs for upcoming year do not exceed the overall DMLs in 1997 or subsequent years

Under this version, the overall, international dolphin mortality cap set by the IDCP for the upcoming year could not exceed the cap in 1997 or subsequent years. For example, the overall international dolphin mortality cap in 1997 and 1998 was set at 7,500 and 6,500 dolphins, respectively. Any harvesting nation would be subject to an ETP embargo unless the nation provided NMFS with documentary evidence that it met requirements (1) through (3) (described in section 2.2.4 of this EA), and that the overall, international dolphin mortality cap set by the IDCP for the upcoming year did not exceed 7,500 dolphins or 6,500 dolphins.

Two House of Representative reports indicate that as late as May 1997, the House version of section 101(a)(2)(B)(iii) explicitly addressed keeping the *international* cap at or below 5,000 dolphins (the 1997 cap, as agreed to in the Panama Declaration). In Senate Bill 1460, introduced by Senator Barbara Boxer in 1995, section 101(a)(2)(B)(iii) required harvesting nations to demonstrate that: (i) the limits allowed under the international program do not exceed 5,000 dolphins beginning in 1996, (ii) each vessel's DML is reduced by a statistically significantly amount each year, and (iii) the per stock per year mortality of depleted stocks does not exceed the 1994 level. The Boxer language may have been revised and inserted into Senate Bill 1420, introduced by Ted Stevens. The November 1995 version of S. 1420 contained no equivalent paragraph. Then, by September 1996, S. 1420 included an equivalent, similarly worded paragraph but without reference to "5,000" or any specific number; also, slightly revised language about "per stock per year" limits was inserted directly after the "limits" language. The final version of the IDCPA, adopted by both the House and the Senate based largely on Senator Stevens' S.39 (introduced in the 105th Congress after S. 1420 had expired at the end of the 104th Congress), included a section 101(a)(2)(B)(iii) very close to the October 1996 version of S. 1420. This confused history is far from definitive, but indicates original Congressional intent may have

been to limit or force down the international mortality cap.

2.3.3.3 Vessel DML cannot increase

Under this version, the DML assigned to each vessel in the international fishery could never exceed the limit assigned to the vessel in 1997 or subsequent years. For example, the DML for vessels in 1997 and 1998 was 94 and 66 dolphins/vessel, respectively. Any harvesting nation would be subject to an ETP embargo unless the nation provided NMFS documentary evidence that it met requirements (1) through (3) described in alternative 2 (section 2.2.4), and that it met the requirement that the DML assigned to each vessel in its fleet did not exceed the DML assigned to that vessel in 1997 (i.e. 94 dolphins/vessel) or subsequent years (e.g., 66 dolphins/vessel in 1998, and 39.68 dolphins/vessel in 1999). Under this alternative, the United States could unilaterally prevent assigning DMLs by consensus, which is the current practice. Furthermore, since NMFS also participates in the IDCP, the United States would not need to rely upon documentary evidence from harvesting nations.

2.3.4 Tuna tracking and verification

Alternative 3 would retain all of the tuna tracking and labeling requirements under the preferred alternative (see section 2.2.5 of this EA), except that Alternative 3 would establish a more stringent domestic and international tracking program. In addition to all the requirements for tuna tracking and verification under the preferred alternative, Alternative 3 would also require: (1) documentation from the vessel operator and the observer with respect to tuna being dolphin-safe and non-dolphin-safe; and (2) vessels could not unload tuna without an official inspector from the nation where the unloading occurred to monitor the unloading and confirm that all records are complete at the time of unloading. The inspector's report would accompany subsequent shipments of that tuna in whatever form it is shipped. Also, there would be no mixed category of wells and thus, all wells would be either dolphin-safe or non-dolphin-safe.

2.4 Alternatives Eliminated from Further Analysis

In developing the preferred alternative and Alternative 3, NMFS considered a large number of possible alternative actions for initial determination as to their feasibility and practicality. Many of these alternative actions were determined to be either not legal, not practicable, and/or not cost-effective and were thus rejected without detailed analysis as part of the overall program to implement the IDCPA. A discussion follows of those alternative actions and the reasons for their rejection.

2.4.1 Restrictions for U.S. Vessels

2.4.1.1 Ban sets on floating objects

Under this alternative, U.S. purse seine vessels would not be permitted to set nets around any

floating objects, whether natural or man-made. The purpose of such action would be to reduce U.S. fishing effort that has the effect of potentially reducing the future yields from stocks of yellowfin and bigeye tuna in the ETP and to reduce or prevent bycatch and discard mortality of small tuna, other fish species (sharks, billfish) and other marine species such as sea turtles and seabirds (Edwards and Perkins, 1998).

The ETP fishery on floating objects (including FADs) has become increasingly important in recent years, as fishing on dolphin has been prohibited for U.S. vessels and because the U.S. market has not been open to tuna and tuna products taken in association with dolphin sets. Furthermore, it appears that the use of FADs has greatly enhanced the efficiency of some fleets, as the success rate on FAD sets is apparently quite high. In fact, the large vessels in the U.S. fleet have become dependent on the fishery on floating objects, including FADs. The IATTC is presently considering whether it is necessary to limit the use of FADs or otherwise restrict the fishery on floating objects. At its October 1998 meeting, the IATTC was presented with proposals by some nations to either prohibit FAD sets or limit the number of FAD units that can be carried aboard a vessel. A work group has been formed to assess the need for such limits and to evaluate the benefits and costs of alternative approaches to manage the floating objects fishery.

NMFS has concluded that it would be premature to take action in this rule to limit or prohibit sets on floating objects. NMFS is aware of the concerns about future tuna yields and bycatch but is also aware that the U.S. fleet is largely dependent on this fishing strategy. NMFS does not have sufficient information to warrant establishment of controls at this time and intends to use the IATTC work group process as a mechanism for compilation of information, development of alternate management strategies, and evaluation of those strategies. NMFS will use the IATTC decision process as the basic mechanism for determining whether, and if so how, to control sets on floating objects. The U.S. industry would be consulted in this process.

2.4.1.2 Allow vessels less than/equal to 363 mt carrying capacity to set on dolphins

This alternative would allow U.S. vessels with 363 mt or less carrying capacity to set on dolphins, as long as they carry an observer, carry the proper equipment (e.g., dolphin safety panel, speedboats), and employ proper techniques with which to reduce dolphin mortality. This alternative would provide the same opportunity to small vessels as to large vessels. However, this action would be contrary to the requirements of the Agreement on the IDCP and the IDCPA and was therefore rejected. As a practical matter, most of these smaller vessels do not have the capability or equipment to fish on dolphin.

2.4.1.3 Allocate U.S. dolphin mortality limits among U.S. vessels

This alternative would divide U.S. DMLs unevenly between different vessels to promote full utilization of DMLs and/or reward or punish, depending on past behavior. Under this alternative, NMFS would establish a mechanism by which "good" performers would be more likely to be issued DMLs, while "poor" performers would be issued fewer DMLs. NMFS has concluded that

it would be premature to establish such a system at this time. Under the Agreement on the IDCP, the IATTC will allocate DMLs on a national basis rather than on a per-vessel basis as is now the case. The United States is working with other participating nations to establish the specific per-stock, per-year DMLs. There are many unanswered questions as to how this system will work and how or even whether limits will be set by species per nation or for all species combined per nation. The current practice is to issue DMLs on a per vessel basis. NMFS does not propose to change this by assuming that the sum of individual vessel DMLs for U.S. vessels is available for NMFS to allocate among the vessels that applied for DMLs. While it may be appropriate in the future to use DML allocations as a tool to influence fishers' behavior, it is not now time for such an approach. Captains' certification and training programs will be developed under the IDCP to promote better performance and to remove poor performers from the fleets. This is probably a better way to reward and punish operators than using DML allocations.

2.4.2 Market restrictions

2.4.2.1 Allow non-dolphin-safe tuna for transport only

This alternative would allow non-dolphin-safe tuna for transport (in bond) only. At the current time, non-dolphin-safe tuna cannot enter any U.S. port even if in bond for further shipment to other locations where it would be accepted. This alternative was rejected because it is contrary to the IDCPA, which provides that all tuna (including non-dolphin-safe tuna) can be imported into the United States from nations with affirmative findings.

2.4.2.2 Allow sale of only tuna labeled "super dolphin-safe"

This alternative would allow the sale of only "super dolphin-safe" tuna. "Super dolphin-safe" refers to tuna which has been caught by any means other than chasing, encircling, killing or seriously injuring dolphins. While there is nothing in the IDCPA that would prevent a company from offering only "super dolphin-safe" tuna for sale, the IDCPA does not provide authority to limit the sale of tuna to only cans labeled "super dolphin-safe." Therefore, this alternative was rejected.

2.4.3 Tuna Tracking and Verification

2.4.3.1 Require paperwork through final sale

This alternative would have required paperwork to accompany tuna through the final sale; for example, a food company that buys tuna or tuna products from fish harvested from the ETP would be required to have all of the tracking and verification paperwork for that tuna, and a retailer would also have to have copies of the paperwork. This alternative was rejected because it would impose too substantial a paperwork burden for too many parties. The proposed system of the preferred alterative will allow U.S. inspectors working with U.S. industry and/or foreign parties to make spot checks and inspections to determine the source and type of fishing

associated with any particular shipment of tuna to confirm whether it is accurately labeled, and to take corrective action as necessary. That is the principal objective of the system and can be achieved without requiring final retailers to maintain voluminous records of all tuna sold in their businesses.

2.4.3.2 No well segregation - track amount or weight

This option would not require well segregation of dolphin-safe and non-dolphin-safe tuna on board fishing vessels. Thus, vessels could simply keep track of the amount or weight of dolphin-safe versus non-dolphin-safe tuna, rather than physically separate the fish. This would simplify the process for vessels and processors. This alternative was rejected because it would not provide a sound basis for classifying a particular production run of canned tuna as dolphin-safe or non-dolphin-safe. The Congress clearly intended that individual consumers be able to have confidence that the tuna in a particular can was in fact completely dolphin-safe.

2.4.3.3 Tag fish

Under this alternative, vessels would identify each fish, using nose tags, chemical tags, or coloring the flesh of the tuna tags, in order to distinguish dolphin-safe from non-dolphin-safe tuna. This alternative was rejected because it would be extremely difficult and costly to implement. Fish are not loaded onto a purse seiner one fish at a time; they are loaded in brails with batches of fish. It would greatly slow down the loading process if fish were to be tagged or marked. Also, given the subsequent handling of fish, it is quite possible that many tags would fall off and be lost. There are no known chemicals or coloring technology that could be widely adopted in the industry at this time. Furthermore, fish loaded early might initially be marked as dolphin-safe, only to find late in the brailing that there was incidental mortality of dolphin. Those fish might then have to be located and remarked. The cost of this operation is excessive and unnecessary; therefore, this alternative was rejected.

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1 Physical Environment

The ETP refers to an area of the Pacific Ocean that covers approximately 19 million square miles and is bounded by 40°N latitude, 40°S latitude, 160°W longitude and the coastlines of North, Central and South America (50 CFR 216.3). The ETP serves as habitat for many marine species, including yellowfin, skipjack and bigeye tunas and a variety of dolphins, and it appears to be the only area in the world where tuna and dolphins are frequently found in close association with one another. In fact, the ETP is the only body of water in which purse seine fishing on dolphins is known to commonly occur. The tuna-dolphin association primarily occurs in a subregion of the ETP, a triangular region roughly the size of the continental U.S. (about 10 million km^2), extending from the tip of Baja California (about 20°N) southward to Peru (about 20°S) and seaward to about 140°W. This subregion is characterized by an exceptionally shallow surface

mixed layer.

3.2 Biological Environment

In contrast to other areas of the equatorial Pacific Ocean, where the thermocline is generally 150-200 meters (m) deep, the depth of the thermocline layer throughout much of the ETP extends only 50-100 m below the surface. Water temperatures in this upper mixed layer are quite warm (25-30°C), and oxygen concentrations are high. Below this layer, water temperatures fall relatively rapidly (from around 27°C to around 15°C) through the thermocline (usually 5-25 meters thick), stabilizing again below the thermocline. Oxygen concentrations also decrease relatively rapidly through the thermocline before increasing again at much greater depths.

Total biological productivity in the ETP tends to be low relative to all other oceans, but productivity is high compared to other tropical oceans. Ocean currents and winds generate a typical pelagic environment, where areas of high productivity are distributed in dynamic, complex, non-random patterns or patches. In general, the productivity of the ETP is higher near the coastlines and decreases with distance offshore, but a number of ocean currents, which tend to control local levels of biological activity, can strongly affect the productivity of various areas. Large climatic events such as El Niño can temporarily change the distributions and abundance of various marine species, with patterns returning to more normal conditions when the anomalous event has passed.

The ETP is host to a wide variety of vertebrate and invertebrate species in addition to the tunas and dolphins whose association has led to this legislation. These other biota include zooplankton, sport fishes, sharks, whales, and sea turtles. The population dynamics of most of these species are not well known, in part due to the relative paucity of research done in this area of the world.

3.2.1 Marine Mammals

The offshore stocks of spotted dolphins are most frequently associated with tunas in the ETP and have historically been set on by tuna purse seiners. However, the frequent appearance of spinner dolphins (eastern and whitebelly stocks) in sets makes this species also quite significant, although in almost all sets they appear in mixed herds with spotted dolphins. The common dolphin is another species which has been targeted for sets by purse seiners, although sets on this species are less frequent in recent years than on the previous two species. Other species are sometimes found in association with tunas, but much less frequently. These include the striped dolphin, the rough-toothed dolphin, the bottlenose dolphin, and Fraser's dolphin (NRC, 1992).

In 1986, NMFS initiated a long-term, large-scale research program to monitor trends in the abundance of dolphin populations in the ETP. The program utilized two research vessels annually for around 120 days each, from 1986 to 1990, for a total of 5 surveys (Wade and Gerrodette, 1993). Sightings of 24 stocks of cetaceans representing 19 species or genera were

recorded and serve as the basis for the current stock assessment. Subsequent surveys were made over the same general area in 1992, 1993, and 1998; however, the data from these surveys are still being analyzed (Gerrodette (NMFS), personal communication, 1998).

In addition to surveys by NMFS, observers are placed aboard tuna vessels not only to monitor the incidental mortality of dolphins and collect data that could lead to further reductions in dolphin mortality, but also to collect information on the searching activities of the vessels and the frequency of encounters with marine mammals. These data are used by the IATTC to obtain estimates of the abundance of dolphins by applying a technique known as line transect analysis, where a correction factor is estimated from the sightings data. It is very difficult to calculate unbiased estimates of absolute abundance due to the fact that tuna vessels tend to concentrate their operations in areas of greatest dolphin abundance (IATTC, 1995). Because the procedures used by the IATTC are unlikely to remove all biases, the resulting estimates are treated as indices of relative abundance of the stocks, rather than estimates of their absolute abundance, as the NMFS ship surveys provide. For purposes of this EA, absolute abundance estimates of marine mammal stocks from NMFS ship surveys are used along with summaries of the general trends of dolphin stocks from observer data, as analyzed by the IATTC.

The following is a brief presentation of information on the status of each marine mammal stock that may be incidentally taken by the ETP tuna purse seine fishery. In addition, Table 1 presents a summary of the abundance and most recent mortality numbers of most of the marine mammal species found in the ETP. Most of the information provided in the following summary can be found in Wade and Gerrodette (1993), NMFS (1991), and IATTC annual reports.

Pantropical Spotted Dolphin (*Stenella attenuata*)

There are three recognized stocks of spotted dolphins in the ETP: northeastern offshore, western/southern offshore, and coastal. Spotted dolphins range from 1.6 to 2.6 m long and weigh up to 100 kg, depending on the stock involved (Dizon *et al*., 1994). The northeastern and western/southern offshore stocks are relatively smaller, have smaller teeth, and are, on average, less spotted than the coastal stock. Distinctions between the northeastern and the western/southern offshore stocks have been made based on external morphology and skull measurements. Spotted dolphins are extremely gregarious, and the offshore stocks are often found in aggregations of more than several hundred animals, frequently in mixed herds with spinner dolphins. The coastal stock is usually encountered in herds of less than 100 animals (NMFS, 1991).

Northeastern offshore spotted dolphin The northeastern offshore stock is distributed from just above the equator at 5°N and west to 120°W (Wade, 1993). On average they are larger than the western/southern form and smaller than the coastal form (NMFS, 1991). It is generally thought that this population, under conditions of no incidental mortality, should be increasing at approximately 2-6 percent per year. Using research vessel data for 1986-90, the northeastern offshore spotted dolphin population abundance has been estimated at 738,100 (range 588,700-

970,400 animals (CV = 0.14)) (Wade and Gerrodette, 1993). The total fishing mortality for this stock for both the U.S. and the foreign fleets combined averaged approximately 48,000 northeastern offshore spotted dolphins between 1986 and 1990. The fishing mortality rate (dividing annual estimates of mortality by conservative annual estimates of population abundance) varied between 2.4 percent and 4.5 percent over the five years, although there is evidence that these rates may be overestimations because of sampling bias (NMFS, 1991). Mortality decreased in the late 1990s, with the average mortality from 1995-97 down to 864 animals (IATTC Report, 1998). In 1993, NMFS determined that the stock was below its maximum net productivity level and designated it as a depleted stock under the MMPA (58 FR 58285, November 1, 1993). The stock has no special status under the ESA.

Western/southern offshore spotted dolphin On average, the western/southern offshore stock of spotted dolphin tends to be shorter in length than the northeastern stock (NMFS, 1991). Using research data from 1986-90, the population of the southern offshore stock has been estimated at 1,298,400, ranging between 918,700 and 1,654,100 animals (CV = 0.15) (Wade and Gerrodette, 1993). The average annual fishing mortality was estimated at 3,200 animals from that same time period. The fishing mortality rate varied between 0.3 percent and 1.9 percent, although as with the northeastern stock, these estimates are most likely positively biased (NMFS, 1991). The average mortality of this particular stock from 1995-97 was 739 animals (IATTC Report, 1998). This stock has no special status under the MMPA or the ESA.

Coastal spotted dolphin The coastal spotted dolphin range from the Gulf of California to approximately 28°N latitude and is normally found in waters within 50 km of the coast. The stock occurs continuously along the Mexican, Central American, and South American coasts to well south of the equator. This stock is larger and more robust than the other stocks and its light-colored spotting is so extensive that it is sometimes referred to as a "silver-back" (NMFS, 1991). Abundance estimates indicate a population of 29,800 animals, ranging from 15,100 to 50,800 animals (CV = 0.35), based on 1986-90 surveys (Wade and Gerrodette, 1993). Estimates of fishery-caused mortality are considered unreliable because of the difficulty in separating the offshore and coastal forms and because of the low level of fishing effort in nearshore waters (NMFS, 1991), although a 1997 survey estimated an annual mortality of 26 animals (IATTC, October 1998 Report). The coastal spotted dolphin has been afforded special protection since 1980 (45 FR 72178 (October 31, 1980)). NMFS has decided to factor the coastal spotted dolphin into its initial and final findings on the effects of chase and encirclement. It has no special status under the ESA.

Spinner dolphin (*Stenella longirostris*)

There are four recognized stocks of spinner dolphins in the ETP: northern whitebelly, southern whitebelly, eastern, and Central American. Due to the high degree of overlap in distribution between the northern and southern whitebelly spinner dolphin stocks, it has been suggested that northern and southern whitebelly stocks be combined into a single management unit. Spinner dolphins often occur in very large herds, and are often found mixed with spotted dolphins. The

stocks most affected by the tuna purse seine fishery are the whitebelly and eastern stocks (NMFS, 1991).

Spinner dolphins reach a length of 1.5-2.2 m, although the size varies among the stocks. The Central American spinner is the longest, reaching a length of 2 m or more, while the eastern spinner dolphin is the smallest. The spinner dolphin name is derived from its habit of leaping clear of the water and spinning on its longitudinal axis, rotating as much as seven times in one leap (NMFS, 1991).

Eastern spinner dolphin Eastern spinner dolphins are, on average, about 3-4 cm smaller than the whitebelly spinner dolphins (NMFS, 1991). The abundance estimate for this species, based on the five ship surveys from 1986-90, is 631,800, ranging from 389,500 to 938,300 (CV = 0.24) (Wade and Gerrodette, 1993). Although U.S. fishermen are not allowed to set on pure schools of eastern spinner dolphins, incidental mortality by foreign vessels occurs. The total fishing mortality of eastern spinner dolphins from 1986-90 ranged from 5,400 to 19,500 per year, averaging approximately 13,860 animals per year. The estimated level of mortality varied between 0.9 percent and 3.3 percent for 1986-90 (NMFS, 1991). The average annual mortality of the eastern spinner dolphin between 1995-97 was 502 animals (IATTC Report, 1998). Because the eastern spinner has fallen below its optimum sustainable population level, in 1993 it was designated as a depleted species under the MMPA (50 CFR 216.15; 58 FR 45066, August 26, 1993). It has no special status under the ESA.

Whitebelly spinner dolphin The abundance estimate for the whitebelly spinner stock based on the 1986-90 ship surveys is 1,019,300 animals, ranging from 694,400 to 1,456,200 animals (CV = 0.19) (Wade and Gerrodette, 1993). Incidental mortality for the whitebelly stock has been lower than for the eastern stock, varying between 3,500 and 11,000 per year from 1986-90. The average mortality during this time was 7,160 animals per year. Percent fishing mortality ranged from 0.4 percent to 1.1 percent (NMFS, 1991). The average annual mortality of the whitebelly spinner dolphin from 1995-97 was 456 animals (IATTC Report, 1998). This stock has no special status under the MMPA or the ESA.

Common dolphin (*Delphinis delphis*) (*Delphinis capensis*)

Common dolphins have recently been classified as two separate species, the short-beaked common dolphin and the long-beaked common dolphin. The *Delphinis delphis* stock consists of three recognized stocks presently taken by the U.S. fleet in the ETP; northern tropical, central tropical, and southern tropical. Stock abundance and mortality data are pooled according to observed distribution. Fishing mortality levels for all three stocks are highly variable from year to year, but are considerably less in absolute numbers than mortalities of northeastern offshore spotted dolphins or eastern spinner dolphins. In the late 1980s, the central tropical stock of common dolphin suffered the greatest mortality of the three stocks (NMFS, 1991).

The maximum body length of the common dolphin is approximately 2.5 m, though most

individuals average less than 2.3 m. The beak is well-defined and often is black with a white tip. The most distinctive external feature of this species is the color pattern on its sides. The light ventral field extends up into the cape, yielding a four-part pattern defined by a criss-cross. These dolphins are easily identified by their unique pigmentation pattern but can be confused with striped and Fraser's dolphins (NMFS, 1991).

Northern tropical common dolphin Northern tropical common dolphins are distributed between latitudes 15°N and 28°N. The most recent abundance estimate is 713,700 animals (unpublished data, cited in IATTC October 1998 report). Annual mortality estimates have ranged from a high of 13,300 in 1986 to a low of 700 in 1990, with an average of 5,600 during these five years. The estimated level of fishing mortality varied between 0.2 and 35.9 percent (NMFS, 1991). The average mortality for the 1995-97 seasons was 97 animals per year (IATTC Report, 1998). This stock has no special status under the MMPA or the ESA.

Central tropical common dolphin Central tropical common dolphins are distributed between latitudes 3°N and 15°N. They are, on average, longer than their northern counterparts and have different skull characteristics. The central tropical stock is separated from the northern tropical stock by an 800 nautical mile-wide zone in which sighting effort has been heavy and sightings of common dolphins have been rare (NMFS, 1991). The most recent abundance estimate for the central tropical dolphin stock is 239,350 animals (unpublished data cited in IATTC October 1998 report). In the late 1980s, the central tropical stock suffered the greatest fishing mortality of the three common dolphin stocks. The mortality estimates for the 1986-90 period range from 4,100 to 12,700, with an annual average of 8,900 animals. The estimated level of fishing mortality varied between 0.7 and 2.1 percent (NMFS, 1991). The annual mortality has decreased in recent years with an average mortality of 119 animals between 1995 and 1997 (IATTC Report, 1998). This stock has no special status under the MMPA or the ESA.

Southern tropical common dolphin Southern tropical common dolphins are distributed between latitudes 3°N and 10°S. There is fairly good separation from the central tropical stock. The abundance estimate for this stock is based on ship survey data between 1986-90 and is 2,210,900 animals, ranging between 1,536,600 and 3,488,200 (CV = 0.22) (Wade and Gerrodette, 1993). The fishing mortality estimates for the five years ranged between 100 and 6,800, with an average of 2,400 per year. The estimated level of fishing mortality varied between 0.0 and 0.3 percent (NMFS, 1991). The annual mortality rate from 1995-97 was 29 animals (IATTC Report, 1998). This stock has no special status under the MMPA or the ESA.

Striped dolphin (*Stenella coeruleoalba*) The striped dolphin is widely distributed in the ETP. Though earlier work suggested that there were two geographical stocks (northern and southern) of striped dolphins, recent investigations by Dizon *et al.* (1994) indicate that striped dolphins in the ETP should be managed as a single stock. Based on the 1986-90 ship surveys in the ETP, this stock is estimated at 1,918,000, ranging between 1,531,800 and 2,249,300 animals (CV = 0.11) (Wade and Gerrodette, 1993). Eighty striped dolphins were reported killed in the 1997 tuna purse seine fishery (IATTC October 1998 report). This stock has no special status under the

MMPA or the ESA.

Rough-toothed dolphin (*Steno bredanensis*) This species' habits are poorly known, though it has been found in association with schools of yellowfin tuna in the ETP and has been seen with pilot whales and bottlenose dolphins, and less frequently with spotted and spinner dolphins. It has a cone-shaped body, a long slender beak, and a sloping forehead. The body is often covered with yellowish-white blotches and the lips and tip of the snout are white. Its name stems from the fact that its teeth are not smoothly conical, as in typical dolphins; instead, the crown is usually marked by a series of fine vertical wrinkles (Leatherwood and Reeves, 1983). Rough-toothed dolphin abundance in the ETP, based on 1986-90 ship surveys, is estimated at 145,900, ranging between 89,400 and 256,800 (CV = 0.32) (Wade and Gerrodette, 1993). Twenty rough-toothed dolphin were reported killed in the ETP purse seine fishery in 1997 (IATTC October 1998 report). This species has no special status under the MMPA or the ESA.

Bottlenose dolphin (*Tursiops truncatus*) Bottlenose dolphins usually form groups of 10 or 25 individuals, although herds of several hundred have been reported from some offshore regions. They are widely distributed in the ETP and commonly mix with spotted and spinner dolphins (Scott and Chivers, 1990). They have a robust head and body with a short beak. Their color pattern varies from brown to charcoal, with lighter sides and belly, and a nondescript cape (Leatherwood and Reeves, 1983). The 1986-90 ship surveys estimated the bottlenose dolphin species in the ETP at 243,500, ranging between 190,900 and 409,900 animals (CV = 0.29) (Wade and Gerrodette, 1993). The estimated incidental annual mortality from the tuna purse seine fishery ranges from zero to almost 200 (reviewed *in* Scott and Chivers, 1990). Ten bottlenose dolphins were reported killed in the ETP purse seine fishery in 1997 (IATTC October 1998 report). This species has no special status under the MMPA or the ESA.

Fraser's dolphin (*Lagenodelphis hosei*) Fraser's dolphins have robust bodies, short beaks, and rather small dorsal fins. They are blueish gray on the back and white on the belly, with a longitudinal striping pattern on the sides. Occasionally, these dolphins will be found in mixed herds of spotted dolphins and have been observed in the company of false killer whales, sperm whales, striped dolphins, and spinner dolphins. In the ETP, they are most often found in equatorial waters (Leatherwood and Reeves, 1983). The estimate of the Fraser's dolphin population in the ETP, based on the 1986-90 ship surveys, is 289,300, ranging between 138,000 and 508,100 animals (CV = .34) (Wade and Gerrodette, 1993). No Fraser's dolphins were reported killed in the ETP purse seine fishery in 1997, although some mortality of this species occurred between 1987 and 1997 (IATTC October 1998 report). This species has no special status under the MMPA or the ESA.

Bryde's whale (*Balaenoptera edeni*) Bryde's whale abundance has never been estimated for the entire eastern Pacific; however, a portion of the ETP stock was recently estimated at 13,000, ranging between 8,900 and 19,900 (CV = 0.20) (Wade and Gerrodette, 1993), and a minimum number in the Gulf of California of 160, based on individually-identified whales (Tershy *et al.*, 1990). There are no data on trends in abundance of the Bryde's whale in the ETP. This species

has no special status under the MMPA or ESA. No mortality of Bryde's whale has been reported in the ETP purse seine fishery.

Risso's dolphin (*Grampus griseus*) Risso's dolphins are occasionally seen as solitary individuals and pairs, but are usually more gregarious, occurring in herds of 25 to several hundred. They have been found in close company with pilot whales. The adults are white or light gray, with dark dorsal fins, flippers, and flukes, a tall, falcate dorsal fin, and extensive scarring. They have a short beak and bulbous forehead. The 1985-90 ship surveys estimated ETP Risso's dolphin populations to be 175,800, ranging from 90,000 to 375,400 animals (CV = 0.38) (Wade and Gerrodette, 1993). No mortality of Risso's dolphins was reported in 1997, although some mortality was reported during 1986 and 1997 (IATTC October 1998 report). This species has no special status under the MMPA or the ESA.

Long-finned/short-finned pilot whale (*Globicephala* spp.) During the 1986-90 ship surveys, the majority of the *Globicephala* spp. observed were "probably" *G. macrorhynchus*, or the short-finned pilot whale. An unknown quantity of sightings of *G. melaena*, the long-finned pilot whale, were "probably" encountered at the southern extreme of the study area in the Peru current, but field identification was not possible (Wade and Gerrodette, 1993). Both look similar, although the short-finned species has shorter flippers and fewer teeth, with a more tropical distribution. Pilot whales have a bulbous forehead and a short beak. They are gregarious, sometimes forming aggregations of several hundred to more than a thousand, and are often found with other smaller odontocetes, primarily bottlenose dolphins. On average, however, they are sometimes seen in small groups of less than fifty animals. Short-finned pilot whales are killed incidentally in the ETP purse seine fishery (Leatherwood and Reeves, 1983). The estimate of long- and short-finned pilot whales in the ETP, based on ship surveys from 1986-90 is 160,200 animals, ranging from 112,300 to 198,400 (CV = 0.14) (Wade and Gerrodette, 1993). Five pilot whales were killed in the ETP purse seine fishery in 1997 (IATTC October 1998 report). These species have no special status under the MMPA or the ESA.

Melon-headed whale (*Peponocephala electra*) The melon-headed whale is a tropical species and forms large herds of 150-1,500 animals. It has often been observed in association with Fraser's dolphins, and sometimes with spinner and spotted dolphins. Melon-headed whales have been reported to herd and perhaps attack small dolphins escaping from the tuna purse seine nets. They have a beak, an elongated short slim body, with long flippers and a tall, falcate dorsal fin. They are uniformly black in color, except for their belly, which is slightly lighter (Leatherwood and Reeves, 1983). Melon-headed whales in the ETP number approximately 45,400 animals, ranging from a low of 34,200 to a high of 110,300 (CV = 0.47) (Wade and Gerrodette, 1993). No melon-headed whales were reported killed in the ETP purse seine fishery in 1997, but mortality of this species has occurred in the 1986-97 period (IATTC October 1998 report). They have no special status under the MMPA or the ESA.

Pygmy killer whale (*Feresa attenuata*) Pygmy killer whales are seen relatively frequently in the ETP, especially near Hawaii, although in no area are they considered abundant. They have a

short beak, a round head, white lips, and a dark grayish brown cape on their lighter gray sides. They are commonly found in groups of fifty or less, and have been found in association with Fraser's dolphins (Leatherwood and Reeves, 1983). Estimates from the 1986-90 ship surveys place the numbers of pygmy killer whales at 38,900, ranging from a low of 18,500 to a high of 63,100 (CV = 0.31) (Wade and Gerrodette, 1993). No pygmy killer whales were reported killed in the ETP purse seine fishery in the 1986-97 period (IATTC October 1998 report). They have no special status under the MMPA or the ESA.

False killer whale (*Pseudorca crassidens*) False killer whales are gregarious, often forming herds of more than one hundred individuals, and they often associate with other cetaceans such as bottlenose dolphins. They primarily feed on squid and large fish, and have acquired a reputation for stealing fish from the lines of fishermen. They have also been seen attacking dolphins escaping tuna purse seine nets in the ETP. They have a tendency to strand enmasse on beaches. False killer whales have a slender body, blackish in coloration. The head is narrow and tapered, with the mouth bearing 8 to 11 large conspicuous teeth in each row. Males may reach 6.1 m, although their maximum length in most areas is 5.5 m (Leatherwood and Reeves, 1983). Abundance estimates for false killer whales in the ETP, based on the 1986-90 ship survey data, range from 11,500 to 109,500 animals, with a population estimate of 39,800 (CV = 0.64) (Wade and Gerrodette, 1993). No false killer whales were reported killed in the ETP tuna purse seine fishery in the 1986-97 period (IATTC October 1998 report). This species has no special status under the MMPA or the ESA.

Killer whale (*Orcinus orca*) Killer whales have a striking black and white pigmentation pattern, a conical head, and broad, paddle-shaped flippers. The males have a distinctly tall triangular dorsal fin, while the females and young animals have a falcate dorsal fin. Killer whales appear to be moderately gregarious animals, with strong social bonds and stable group structures (Leatherwood and Reeves, 1983). The 1986-90 ship surveys estimated the abundance of killer whales in the ETP at 8,500, ranging between 4,700 and 15,900 animals (CV = 0.37) (Wade and Gerrodette, 1993). No killer whales were reported killed in the ETP purse seine fishery in the 1986-97 period (IATTC October 1998 report). This species has no special status under the MMPA or the ESA.

Cuvier's beaked whale (*Ziphius cavirostris*) Cuvier's beaked whales range far from continental land masses. They are most often observed in groups of three to ten animals, though they have been in groups of over 25 animals. They have a sloping forehead, a short beak, and two conical teeth at the tip of the lower jaw, exposed in males, unerupted in females. Their coloration varies. The back and sides are usually covered with linear scars, which are attributed to intraspecific fighting (Leatherwood and Reeves, 1983). The 1986-90 ship surveys estimated the stock of Cuvier's beaked whale in the ETP at 20,000, ranging from 13,800 to 34,500 animals (CV = 0.27) (Wade and Gerrodette, 1993). This species has no special status under the MMPA or the ESA.

Mesoplodonts (*Mesoplodon* spp.) Because of difficulty in differentiating among species, the 1986-90 ship survey provided a single abundance estimate for the various *Mesoplodon* species,

which included Blainville's beaked whale (*M. densirostris*), the pygmy beaked whale (*M. peruvianus*), a possibly un-named *Mesoplodon* species, and unidentified *Mesoplodon* spp. (Wade and Gerrodette, 1998). In general, all species of *Mesoplodon* have spindle-shaped bodies that taper noticeably at both ends. They are laterally compressed, with small heads and well-defined beaks. They have a single pair of fully developed teeth, shaped and positioned in a distinctive manner for each species (Leatherwood and Reeves, 1983). From the 1986-90 ship surveys, *Mesoplodon* spp. in the ETP had an estimated abundance of 25,300, ranging from 17,400 to 34,400 (CV = 0.2) (Wade and Gerrodette, 1993). These species have no special status under the MMPA or the ESA.

Sperm whale (*Physeter macrocephalus*) Sperm whales have been found singly or in groups of more than fifty or more individuals. Older males are usually found alone or in small groups, except during the breeding season when they may join with nursery or maternity schools for mating. Larger groups may consist of bachelor herds, immature animals, or nursery herds. While adult males may range more poleward than females and immature males, females and their young are not often found outside the zone bounded by 40°N and 40°S. Sperm whales feed primarily on squid, but they may occasionally eat octopus and a variety of fish species such as salmon and rockfish. They can be distinguished by their huge boxlike head (up to 40 percent of their body length), and can reach lengths up to 18 m long. They are dark grayish brown to brown and have a rounded or triangular hump, followed by knuckles along the spine (Leatherwood and Reeves, 1983). In the ETP, sperm whale abundance has been estimated from the 1986-90 ship surveys at 22,700, ranging from 14,800 to 34,600 animals, (CV = 0.22) (Wade and Gerrodette, 1993). This species is considered depleted under the MMPA and endangered under the ESA.

Dwarf sperm whale (*Kogia simus*) The dwarf sperm whale has a shark-like head and is confined to temperate and tropical latitudes. Its maximum length is 2.7 m. Dwarf sperm whales are normally observed in groups of no more than ten animals. They feed primarily on squid, although fish and crustraceans are also eaten (Leatherwood and Reeves, 1983). In the ETP, the dwarf sperm whale population is estimated at 11,200 animals, ranging from 7,700 to 16,200 (CV = 0.29) (Wade and Gerrodette, 1993). This species has no special status under the MMPA or the ESA.

Blue whale (*Balaenoptera musculus*) Adult blue whales may reach a maximum body length of 33 m. They are long-bodied and slender and have a broad, flat rostrum and when viewed from above, appear light blue. They feed primarily on zooplankton. A major area of concentration for blue whales in the ETP is around the Costa Rican Dome, where sightings have been recorded throughout the year but increase seasonally in the winter (NMFS, 1998). Blue whale abundance is estimated in the ETP from ship surveys conducted from 1986-90 at 1,415 animals, ranging from 1,100 to 2,500 (CV = 0.24) (Wade and Gerrodette, 1993). This species is considered depleted under the MMPA and endangered under the ESA.

Other marine mammals Data collected from 1986-90 and the most recent ship surveys (1992, 1993, and 1998) have provided NMFS with the most comprehensive information regarding

actual abundance and identification of marine mammal species in the ETP which may interact with tuna purse seiners. Other cetaceans that are less commonly seen in the ETP but were not seen in the 1986-90 ship surveys include: the Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), the pygmy sperm whale (*Kogia breviceps*), the minke whale (*Balaenoptera acutorostrata*) which have no special status under the MMPA or the ESA, the sei whale (*Balaenoptera borealis*), the fin whale (*Balaenoptera physalus*), the southern right whale (*Eubalaena australis*), and the humpback whale (*Megaptera novaeangliae*), all of which are listed as endangered under the ESA. Pinnipeds have also been sighted in the ETP, but they have not been known to become entangled with tuna purse seines. Pinniped species seen, usually one or two at a time, include the California sea lion (*Zalophus californianus*), northern fur seal (*Callorhinus ursinus*) and the northern elephant seal (*Mirounga angustirostris*).

3.2.2 Sea Turtles

In addition to marine mammals, the ETP tuna purse seine fishery is also known to take sea turtles incidental to fishing operations. Impacts of the purse seine fishery on sea turtles include injury or mortality as a result of falling from the net onto the deck or being run through the power block as the net is hauled aboard. The tendency for turtles to associate with flotsam in the open ocean make them more likely to be involved with sets on logs or other floating objects. Furthermore, turtles may also be captured in other types of sets if the area being fished has a high turtle density, such as the nearshore waters of southern Mexico, Costa Rica, and Panama (Fox, 1990).

Tropical regions are generally the primary nesting and feeding habitats for sea turtles. In the ETP, the location of important nesting beaches have been determined. However, studies of sea turtles at these sites usually have been limited to monitoring trends in the counts of nesting females. Consequently, absolute abundance estimates are not available. Furthermore, the at-sea distribution and abundance of turtles in this region is not known.

Current estimates of the numbers and species of turtles that might be captured or killed annually in the ETP tuna purse seine fishery have been extrapolated from records of incidental take of turtles collected by NMFS observers on U.S. vessels during the 1975 fishing season. During 28 cruises in the 1975 season, 1,503 total sets were observed (less than 100 percent coverage). A total of 113 turtles were caught in 93 sets, virtually all of which were log/school sets. Thus, the rate of capture in 1975 was 0.22 turtles per log/school set. Forty-three percent of the turtles captured were released, 32 percent had an unknown fate, 12 percent escaped, 8 percent were injured, and at least 4 percent were known to have been killed. Of the total turtles observed, 58 percent were positively identified. Approximately 75 percent of these were olive ridleys and the remaining portion was comprised of nearly equal numbers of hawksbill, green, leatherback, and loggerhead turtles (Fox, 1990).

In response to concerns regarding continued high mortalities of dolphins caused by the entire ETP tuna purse seine fleet, Congress amended the MMPA in 1988, which required all large U.S. purse seiners to carry an observer on every fishing trip. In addition to collecting data on the take

of marine mammals incidental to fishing operations, these observers also began collecting data on sea turtle bycatch in 1990. Five years of data (1990-1994) were collected by MNFS-trained observers on 100% of all U.S. vessels fishing in the ETP.

During the years 1990 to 1994, the U.S. fleet (vessels with greater than 363 mt carrying capacity) took turtles in 7 to 13 percent of its sets, with an overall average of 9.5 percent over this time period. Most turtles were taken during sets on floating objects with less on school sets, and even less on dolphin sets. During the five year period, only four turtles were killed accidentally and over 91% of all turtles incidentally taken during fishing operations were released unharmed. Additionally, 0.5 percent of all turtles encountered were accidentally killed, and 3.5 percent were released with injuries. The rest (5 percent) were either dead prior to the set (<1 percent), escaped from the net prior to the set(>3 percent), or were recorded as unknown (<1 percent). Of the species taken during 1990-1994, 69 percent were olive ridleys, 17 percent were unidentified, 12 percent were green turtles, and the remaining 2 percent were comprised of 6 leatherbacks, 1 hawksbill, and 4 loggerheads.

In order to standardize data gathered on both U.S. and foreign tuna purse seine vessels fishing in the ETP, IATTC observers were placed aboard U.S. vessels in the early 1990s to monitor the take of marine mammals incidental to fishing operations. These observers do record sea turtle mortality during fishing operations; however, it is not an IATTC mandate, and they generally do not record sea turtle entanglement. The most recent data (1994-1998) on sea turtle mortality by U.S. purse seiners shows that olive ridley were the species most often taken, and FAD sets took more sea turtles than either school sets or log sets, although there were relatively more sets on FADs than on schools during the years where more sea turtles were taken.

The most recent data from the IATTC estimates the average number of sea turtles caught and killed per year in the ETP purse seine fishery (U.S. and foreign vessels with 100 percent observer coverage) from 1993-97 at 860 turtles. The data indicate that on average, per year, more than twice as many sea turtles were caught and killed in floating object sets (~426) verses dolphin sets (~183) or school sets (~252). Olive ridleys dominated the turtle species caught, with greens, loggerheads and unidentified species rounding out the total (IATTC Annual Report, 1999).

The following is a synopsis of the current state of knowledge on the distribution, abundance and activities that are known or thought to influence the survivorship of turtle species that have been reported incidentally taken in the ETP tuna purse seine fishery.

Green turtle (*Chelonia mydas*) The green turtle is listed as a threatened species under the ESA, except for breeding populations in Florida and on the Pacific coast of Mexico, which are listed as endangered. The green turtle is a circumglobal species found in tropical seas and, to a lesser extent, in subtropical waters with temperatures above 20°C (NMFS and USFWS, 1998a). The species is common in the ETP (Fox, 1990). There are no known nesting grounds on the U.S. west coast, and little is known about the pelagic range of the green turtle. Stranding reports indicate that immature green turtles regularly visit the waters off the southwest coast of the U.S.

Approximately 30-50 turtles reside in San Diego Bay, California, probably due to a warm water effluent from a power generating station (Dutton, P.H., NMFS, unpublished). Green turtles that have grown large enough (30-35 cm) to reside in the nearshore benthic environment have a nearly exclusively herbivorous diet consisting of selected macroalgae and sea grasses. As they age and become more pelagic, the turtles feed on invertebrates, although little is known about the makeup of the diet (Mortimer, 1982; Bjorndal, 1985). The primary threats to green turtles in in the ETP include harvest by humans, habitat loss, and entanglement and injestion of debris. Minor threats to the green turtle include the incidental take by distant-water fisheries, but data are generally lacking for this threat (NMFS and USFWS, 1998a).

Hawksbill turtle (*Eretmochelys imbricata*)
The hawksbill turtle is listed as an endangered species throughout its range. In the Pacific, the species is rapidly approaching extinction due to a number of factors, with the intentional harvest of the species for meat, eggs, and its shell having the greatest impact. The hawksbill turtle is circumtropical in distribution, generally occurring from 30°S to 30°N latitude within the Atlantic, Pacific, and Indian Oceans and associated bodies of water. Although the hawksbill was apparently common in nearshore waters from Mexico to Ecuador as recently as 50 years ago, there have been no documented nesting sites in recent years on the Pacific coast. Within the central Pacific, nesting is widely distributed but scattered and in very low numbers. Foraging hawksbill have been reported in nearly all of the island groups of Oceania and among many islands in the far western and southwestern Pacific. They appear to be specialist sponge carnivores. They are recognized by their relatively small size (carapace length less than 95 cm), narrow head with tapering "beak," thick, overlapping shell scutes, and strongly serrated posterior margin of the carapace. The major threat to hawksbill turtles are the harvest of turtles and eggs and increased human presence, which limits habitat. Minor threats include entanglement and ingestion of debris, and incidental take in recreational and commercial fisheries, although little is known about the impact of the latter. In Hawaii, incidental catches of hawksbill turtles occur primarily in nearshore gillnets. Driftnet fisheries in offshore waters in the North Pacific have taken turtles in the past, although hawksbills have not been documented in the take (NMFS and USFWS, 1998b).

Olive ridley turtle (*Lepidochelys olivace*) Nesting populations of olive ridleys along the Pacific coast of Mexico are listed as a threatened species, and all other populations are listed as endangered. The olive ridley is highly migratory and occurs worldwide in tropical and warm temperate ocean waters. It is by far the most common and widespread sea turtle in the waters of the ETP (Pitman, 1990). It is increasingly uncommon further offshore, and rare in the central Pacific, both at sea and around islands (Balazs, 1982). At-sea occurrences in the U.S. and waters under U.S. jurisdiction are limited to the west coast of the continental U.S. and Hawaii, where the species is rare but sightings are reportedly increasing. The olive ridley is the smallest living sea turtle, with an adult carapace length usually between 60 and 70 cm, and they rarely weigh over 50 kg. Data on the food and foraging habits of olive ridleys are sparse, with much of the information anecdotal. Identified prey include a variety of mostly benthic species, including bottom fish, crabs, oysters, and sea urchins, but also some pelagic prey items, including jellyfish

and red crabs. At sea in the ETP, olive ridleys readily associate with objects floating in the water, probably for shelter from predators. The harvest of turtles and their eggs for food or any other domestic or commercial use constitutes a widespread threat to these species. In addition, loss of habitat due to beach mining, construction, and artificial lighting also constitute a major threat to the survival of olive ridleys. Additional threats are vessel collisions and incidental take in fisheries (NMFS and USFWS, 1998c).

Loggerhead turtle (*Caretta caretta*) Throughout its range, the loggerhead turtle is listed as a threatened species under the ESA. The loggerhead is a circumglobal species inhabiting continental shelves, bays, estuaries and lagoons in the subtropical, temperate and occasionally tropical waters of the Atlantic, Pacific, and Indian Oceans. (Dodd, 1990). While there are no known nesting sites on the U.S. west coast, loggerheads have been sighted off the southern California coast, and most sightings were juveniles, 20-60 cm in length (NMFS and USFWS, 1998d). Juvenile and subadult loggerheads are omnivorous, foraging on pelagic crabs, molluscs, jellyfish and vegetation captured at or near the surface (Eckert, 1993). Threats to loggerheads in the Pacific include the occasional incidental mortalities associated with commercial fisheries, vessel collisions, egg and turtle harvest, ingestion and entanglement in debris and fishing gear, and loss of habitat due to human presence (NMFS and USFWS, 1995d).

Leatherback turtle (*Dermochelys coriacea*) The leatherback turtle is listed as an endangered species under the ESA throughout its range. Leatherbacks, the largest of the sea turtles, have a circumglobal distribution and commonly range further north than other sea turtles, probably because of their ability to maintain warmer body temperature over longer time periods and the widely dispersed nature of their primary food source, cnidarians (jellyfish and siphonophores) and tunicates (salps and pyrosomas) (Eckert, 1993). Adult leatherbacks are sometimes seen in coastal waters, but primarily inhabit open ocean waters. Their maximum recorded dive depth exceeds 1000 m, although the leatherback's routine dive depth and duration have been recorded between 50-84 m and 4-14.5 minutes, respectively. There are no known nesting grounds on beaches under U.S. jurisdiction. Threats to migrating turtles are unknown. Threats to leatherbacks in the Pacific include occasional incidental takes in coastal and high seas fisheries, vessel collisions, habitat loss, and the killing of nesting females and eggs at the nesting beaches (NMFS and USFWS, 1998e).

3.2.3 Sea Birds

The most common sea birds found in the ETP include a variety of shearwaters, boobies, terns, frigates, petrels, and jaegers. In fact, tuna fishermen will often target aggregations of birds knowing that there may be schools of tuna below**.** Despite such close associations between sea birds and tuna, no sea birds have ever been observed caught in a purse seine net during tuna fishing operations in the ETP (T. Price (NMFS), personal communication, 1998).

3.2.4 Tunas

From an economic point of view, the most important species of tuna in the ETP tuna purse seine fishery is the yellowfin, although skipjack, bluefin, bigeye, and black skipjack are also caught and sold. Yellowfin, skipjack and bigeye comprise the most significant portion of the catch in the ETP, although bluefin, albacore, black skipjack, bonito, and other species contribute to the overall harvest in this area (IATTC Annual Report, 1998). The catches in sets that encircle dolphins are almost exclusively large yellowfin tuna (> 80 cm). Catches in log sets and school sets may consist of pure schools of small yellowfin or skipjack or a mixture of small yellowfin with skipjack and sometimes black skipjack tuna (IATTC, 1989).

Yellowfin tuna (*Thunnus albacares*)
The biology and population dynamics of ETP yellowfin have been extensively investigated by the IATTC. Yellowfin are upper trophic level predators, feeding opportunistically on fish and cephalopods. The majority of females mature at 120 cm, although considerable variance exists. Males may mature as small as 50 cm. Juvenile yellowfin may serve as prey for billfishes and sharks as well as other large predators. Fish larger than 85 cm are frequently found in association with dolphins (NMFS, 1991). Yellowfin catches averaged 265,000 metric tons (mt) from 1985-90 and 228,900 from 1991-96 (IATTC Fourth Quarter Report, 1997). Detailed assessments for yellowfin indicate that long term potential yield for the ETP is about 250,000 mt. This yield is greater than previously reported and is due to a period of high recruitment in the late 1980's and a shift in fishery operations, raising the yield-per-recruit. This species is fully utilized.

Skipjack tuna (*Euthynnus pelamis*) Skipjack tuna biology has received less attention than that of yellowfin tuna. Skipjack are distributed throughout tropical waters. Spawning occurs between October and March, generally toward the mid-Pacific. The prey is different for skipjack tuna than that described for yellowfin, with crustaceans making up more than 50 percent of the diet. Skipjack grow rapidly; rates of up to 28 cm per year for the first year, and 12 cm during the second year are common. The maximum age of skipjack is approximately 5 years, although catches of fish older than 3 years are rare. Skipjack catches averaged 80,000 mt from 1985-90, and from 1991-96, catches averaged 89,500 mt (IATTC Fourth Quarter Report, 1997). The consensus is that the skipjack resource is under-exploited, although its long term potential yield is unknown (NMFS, 1991).

Bigeye tuna (*Thunnus obesus*) The bigeye ranges worldwide in warmer seas and from central Washington to Peru and the Galapagos Islands. It is a pelagic species, and has been found as deep as 250 m. Specimens as large as 244 cm have been found, but they are usually less than 183 cm (Eschmeyer and Herald, 1983). Prior to 1994, the average catch of bigeye in the ETP by surface gear was approximately 4,000 mt. In 1994, the annual catch increased to 29,000 mt, in 1995, to 37,000 mt, and in 1996, to 52,000 mt. These increasing catches resulted from the discovery that bigeye associated with floating objects, but well below the surface, and could be detected with sonar and caught with purse seines. Many of these floating objects are fish-aggregating devices placed in the water by the fishermen. The average annual estimated catch of bigeye tuna from 1991-96 was 17,000 mt in the ETP (IATTC Annual Report, 1998).

Other tunas

In 1996, the total combined catch for the following four tuna species (bluefin, albacore, black skipjack, and bonito) in the ETP purse seine fishery was 9,000 mt, the same as the 1981-95 average (range: 2,000-17,000 mt) (IATTC Annual Report, 1998).

Bluefin tuna (*Thunnus thynnus*) The bluefin tuna ranges from as far north as Shelikof Strait in Alaska to southern Baja California, but it is most common south of Los Angeles, California. It favors both inshore and offshore seas and is the only large tuna with a short pectoral fin (Eschmeyer and Herald, 1983). Total 1997 catch estimates of bluefin were 2,300 mt (IATTC Fourth Quarter Report, 1997).

Albacore tuna (*Thunnus alalunga*) The albacore tuna reaches a maximum length of 137 cm and ranges worldwide in temperate seas. It is rare in the tropics, though it has been caught in ETP tuna purse seine nets. It prefers the open ocean and clear water (Eschemeyer and Herald, 1983), rarely being found close to shore.

Black skipjack tuna (*Euthynnus lineatus*) The black skipjack tuna ranges from central California south to Colombia and the Galapagos Islands, but rare north of Baja California. It is an epipelagic, usually coastal species, and reaches a maximum length of 99 cm (Eschmeyer and Herald, 1983).

Pacific bonito (*Sarda chiliensis*) There are two populations of Pacific bonito. The northern population ranges from Alaska to southern Baja California, while the southern population occurs off Peru and Chile. They feed on fish and squid and are usually found near shore. They reach a maximum length of 102 cm (Eschemeyer and Herald, 1983).

3.2.5 Other Fish (non-tuna)

Billfish

The billfish family (Istiophoridae) contains the marlins, sailfishes, and spearfishes, the last of which does not generally interact with the ETP tuna purse seine fishery. Billfish occur in all tropical seas, with a few species entering temperate waters (especially when following schools of prey fishes). They are among the largest and fastest swimming fish, and many migrate long distances. They can change depths quickly, but are usually found near the surface. They primarily feed on other fish, squid, and crustaceans and are often found near floating objects that attract prey, which probably explains why they have been found incidentally caught in the tuna purse seine fishery in the ETP. Common marlin species include the black marlin (*Makaira indica*), the blue marlin (*Makaira nigricans*), and the striped marlin (*Tetrapturus audax*) (Eschemeyer and Herald, 1983). The blue marlin catch, in particular, is larger in sets made on tunas associated with floating objects than in other types of sets. The striped marlin is most often caught by purse seiners off northern South America from the coast to about 120°W (IATTC

meeting minutes, June 10-12,1998). The sailfish (*Istiphorus platypterus*) is easily recognized by its fan-shaped dorsal fin. It ranges from San Diego, California, to Chile and generally swims near the surface (Eschemeyer and Herald, 1983). The estimated average number of billfishes (which probably includes swordfish, summarized below) caught in the ETP tuna purse seine fishery per year from 1993-96 averaged 2,027 fish (IATTC Annual Report, 1998).

Swordfish (*Xiphias gladius*) The swordfish (family Xiphiidae) is easily recognized by its upper jaw, shaped like a long flattened sword or bill. They are found worldwide, in tropical and temperate seas, from Oregon southward, and are migratory and solitary. They eat other fish, pelagic crustaceans, and squid, and reportedly use their sword to kill their prey (Eschemeyer and Herald, 1983).

Sharks/rays

Sharks and rays are cartilaginous fish, belonging to the subclass Elasmobranchi. Four species of sharks and two species of rays interact with and are caught as bycatch in the ETP tuna purse seine fishery. The average estimated number of sharks and rays caught and discarded by ETP tuna purse seiners per year in 1993-96 was 39,990 fish (IATTC Annual Report, 1998).

Rays The two common rays found in the ETP tuna purse seine fishery are manta rays (*Manta birostris*) and stingrays (family Dasyatididae). Manta rays are found in warm-temperate to tropical seas. They are pelagic and often swim actively at or near the surface, "flying" through the water. They feed mostly on pelagic crustaceans and small schooling fishes, which they "herd" into their mouths with their head flaps and strain from the water with complex filter plates at the gills. Stingrays generally have 1 to 2 large stingers well back on their long and slender tail. They occur worldwide, mostly in warm coastal waters, and generally feed on small pelagic fishes, squids, shrimps, and mollusks (Eschemeyer and Herald, 1983).

Sharks Common bycatch of shark species in the ETP purse seine fishery include blacktip sharks (*Carcharhinus brachyurus*), silky sharks (*C. obscurus*), whitetip sharks (*C. longimanus*), and hammerhead sharks (Sphyrnidae family). Blacktip sharks, also known as narrowtooth sharks, have narrow-cusped upper teeth and dusky pectoral fin tips and feed on fish and cephalopods. They are mainly found inshore, and prefer warm-temperate waters. Silky sharks, also known as dusky sharks, have a middorsal ridge, broadly triangular upper teeth, and are gray and white with dusky or black-tipped fins. In the Pacific, they are found from Redondo Beach, California, to the Gulf of California. They feed on fish (including small sharks and rays), squid, and other invertebrates. Whitetip sharks are circumtropical and epipelagic, reaching the offshore ETP. Males grow as long as 8 ft, and females to at least 9 ft. They eat fishes, squids, other pelagic mollusks, and carrion. Lastly, hammerhead sharks are closely related to and probably descended from the requiem sharks (the first three sharks mentioned belong to this family), but their head is expanded on each side. They are found worldwide in warm seas and are common in the tropics, on continental shelves, around islands, and well offshore, but none are truly epipelagic. Most hammerhead species are fish-eaters, but some crustaceans are eaten (Eschemeyer and Herald,

1983).

Triggerfish (Family Balistidae) The triggerfish family are a common bycatch of the ETP tuna purse seine fishery. Triggerfish are deep-bodied, compressed fishes with a spinous dorsal fin which can cause injury to predators attempting to swallow them. They occur in all warm seas and are pelagic (Eschemeyer and Herald, 1983). The estimated average number of triggerfish caught and discarded as bycatch by ETP tuna purse seiners from 1993-96 was 464,895 fish per year (IATTC Annual Report, 1998).

Wahoo (*Acanthocybium solandri*) The wahoo is a very elongated, mackerel-like fish with a slender, sharp-pointed head. It is carnivorous, feeding on other fishes and squids. It has been known to take bites from the sides of tunas. The wahoo is a pelagic species, living a solitary life at the ocean surface and can be found world-wide in warm water (Tinker, 1991). The estimated average number of wahoo caught and discarded by ETP tuna purse seiners from 1993-96 was 196,704 fish per year (IATTC Annual Report, 1998).

Rainbow runner (*Elagatis bipinnulatus*) The rainbow runner is in the jack family (Carangidae) and is long, slender and spindle-shaped. They are circumtropical in distribution, pelagic, and occasionally caught by trolling (Tinker, 1991). They are a relatively less common bycatch species in the ETP purse seine fishery, which caught and discarded an average of 14,395 rainbow runners per year from 1993 to 1996 (IATTC Annual Report, 1998).

Yellowtail (*Seriola lalandi*) Like the rainbow runner, yellowtails are in the jack family and are a relatively less common bycatch species in the ETP purse seine fishery. They are large (reaching a length of 152 cm) and silvery with yellowish fins. They are a schooling fish, ranging from British Columbia to Chile, and are found nearly worldwide in subtropical waters (Eschemeyer and Herald, 1983). The average estimated number of yellowtail caught and discarded by purse seiners in the ETP from 1993 to 1996 was 39,767 fish per year (IATTC Annual Report, 1998).

Dolphinfish (*Coryphaena hippurus*) The dolphinfish, also known as the mahi mahi or dorado, is a common bycatch species of the ETP tuna purse seine fishery. They have long, slender bodies with long dorsal and anal fins and widely forked tails. They have a brilliant blue color, are covered with spots, and reach a length of about six feet. Dolphinfish are distributed world-wide in tropical and warm temperate seas and feed on small surface fishes and other planktonic species (Tinker, 1991). The average estimated number of dolphinfish caught by ETP tuna purse seiners in 1993-96 was 465,408 fish per year (IATTC Annual Report, 1998).

Other finfish Many other large and small bony fish are less commonly caught as bycatch by the ETP tuna purse seiners. The IATTC simply categorizes these other species in their annual report as “other large teleosts” and “other small teleosts.”

The estimated average number of other small bony fish that were caught and discarded by ETP tuna purse seiners per year from 1993-96 was 792,826 fish (IATTC Annual Report, 1998).

Flyingfishes are a common small teleost fish species found in the ETP. They occur worldwide in warm seas and are usually found offshore at the surface, often congregating around islands. They are distinguished by their long winglike pectoral fins, which are used for aerial gliding. They mainly eat small crustaceans and are sold as bait for marlins. Common species in the ETP are the California flyingfish (*Cypselurus californicus*), which ranges from Oregon to southern Baja California; blotchwing flyingfish (*C. hubbsi*), ranging worldwide in the tropics; and sharpchin flyingfish (*Fodiator acutus*), which occurs worldwide in tropical seas, from southern California to Peru (Eschemeyer and Herald, 1983).

The estimated average number of large teleosts caught and discarded by ETP tuna purse seiners from 1993-96 was 23,509 fish per year (IATTC Annual Report, 1998).

3.3 Tuna Purse Seine Fishing in the ETP

The primary species sought by the ETP tuna purse seine fishery are yellowfin and skipjack tuna, although bigeye has become an important component in the last five years. Tuna purse seine vessels vary in size from 45 to 1700 short tons (st) (40.9 to 1,554 metric tons (mt)) carrying capacity and range from forty year old baitboat conversions to brand-new, sleek, super-seiners. Seven U.S. vessels and over 98 foreign vessels with carrying capacity greater than 400 st (363 mt) are now operating or have recently operated in the ETP.

Purse seine vessels use a long net to encircle the target species. During deployment of gear, the net forms a circular wall of webbing around the school. The net must be deep enough to reduce the likelihood of fish escaping underneath, and the encircling must be done rapidly enough to prevent the fish from escaping before the bottom is secured shut. Tuna purse seine nets are somewhat trapezoidal in shape. The webbing is the main component and is generally made from nylon dipped in tar for added strength and longevity. Mesh size is predominantly 4 1/4 inch (in) (10.77 centimeter (cm)) stretched, but can be as large as 8 in (20.30 cm) at the bottom of the seine. Depending on the size of vessels, nets generally vary from 1/4 mile (402.32 m) to one mile (1,610.30 m) in length, and from 300 to 700 feet (91.44 to 213.35 m) in depth.

Locating fish is the primary problem for fish captains. Crew members search for cues that may indicate the presence of fish. The type of cue depends on the type of tuna schooling behavior that is occurring. "School fish," or free swimming tuna, are found using cues such as birds and signs of disturbance at the water surface caused by the schooling fish. Tuna associated with floating objects (logs, FADs) are called "log fish" and are found using cues such as flotsam and birds. For reasons that are not clear, yellowfin tuna over 55 pounds (25 kilograms (kg)) are often found in association with schools of dolphins in the ETP. Tuna fishermen have taken advantage of the association between yellowfin tuna and dolphins by using the more easily detected dolphin schools to help find fish. Tuna fish associated with marine mammals are called "dolphin fish" and the cues are birds and dolphin species.

School sets (sets on tuna schools not associated with either floating objects or with dolphins)

tend to catch free-swimming schools of moderately small yellowfin tuna (about 7-8 kg, 60 cm total length), or mixed schools of yellowfin and skipjack tuna, and little else. Dolphin sets catch relatively large yellowfin tuna (15-25 kg and 75-125 cm), some or (rarely) all of the associated tuna, and very little else. Log sets tend to catch small, pre-reproductive yellowfin tuna (less than 5 kg, less than 50 cm fork length) or skipjack tuna (or a mixture of both tuna), together with a wide variety and large quantity of other biota, including sharks, billfish, other large and small sportfish, and a variety of other small noncommercial tunas. Since 1993, bigeye tuna have formed a larger fraction of the catch than yellowfin tuna. Dolphin sets traditionally have been preferred by tuna fishermen because the associated yellowfin tuna are abundant, large, relatively easy to locate and capture, not associated with unwanted fish, and generally have been more valuable per pound than the smaller school or log associated tuna (Edwards and Perkins, 1998).

IATTC data indicate that fishing on floating objects is now more common than fishing on schools. The number of school sets per year has dropped from nearly 8,000 sets in 1988 to about 5,300 sets in 1997, while the number of floating object sets has risen from less than 3,000 sets in 1988 to just under 6,000 sets in 1997. Most of this increase reflects the shift to fishing on fish aggregating devices, which now account for 80-90 percent of all sets on floating objects. Fishing on floating objects results in higher levels of discards of small tuna, with discards of almost 8 mt per set in 1995-97, versus discards of less than .4 mt per set in school sets in the same period and virtually no discards of tuna in dolphin sets. Total tuna discards from FAD sets in 1997 are estimated to have been 36,000 mt, out of a total catch of about 186,700 mt. In addition, floating object sets result in significant bycatch of large bony fish such as mahi mahi and wahoo as well as large numbers of other non-tuna species, such as billfish, sharks, rays, and triggerfish. Data from 1993 to 1997, comparing the average bycatch per year of the entire ETP purse seine fleet from sets on dolphins, schools, and floating objects, reveal that, of all sharks and rays caught in tuna sets, 8 percent were caught in dolphin sets, 20 percent in school sets, and 72 percent in log sets. Similarly, of large bony fish (mahi mahi, wahoo, yellowtail and rainbow runner), 95 percent (734,440 fish) were caught in log sets versus 4.5 percent and 0.5 percent in school sets and dolphin sets, respectively. Because the vessels are not set up with the proper equipment to preserve the bycatch and sell it, most of these fish are discarded as waste, although some are retained for food on board the vessels.

3.4 Economic Environment

3.4.1 U.S. Purse Seine Fleet

As indicated above, one of the ways tuna are harvested is by searching for and herding dolphins and then encircling the dolphins with the net, with the intent of capturing the tuna and releasing the dolphins using backdown procedures. Under the MMPA, U.S. tuna purse seine vessels used to be allowed to fish for yellowfin tuna in the ETP in this manner, subject to a variety of permit, observer, gear and procedural requirements. Generally, vessels less than 400 st (363 mt) are considered too small to effectively fish for tuna associated with dolphin because of their slow speeds, short nets and limited deck space to carry more than the two or three speedboats needed

to herd dolphins. There is little history of such vessels actually fishing on dolphins, and under the IDCPA, these vessels would be prohibited in the future from intentionally encircling dolphin to catch tuna. However, for many years the United States has had in place regulations that require domestic fishermen aboard vessels greater than 363 mt to equip their vessels with special dolphin safety gear and to follow certain procedures for releasing dolphins as well as to have 100 percent observer coverage.

As a practical matter, however, there has been almost no fishing on dolphin by large U.S. vessels for several years. Most of the large U.S. tuna purse seine vessels that used to fish in the ETP are now active in the western Pacific, where a treaty with certain Pacific island states provides the fleet with access to rich fishing grounds.. The large U.S. vessels remaining in the ETP have shifted away from fishing on dolphin due to both statutory requirements and market demands (U.S. processors will not buy tuna caught in association with dolphin). U.S. purse seine vessel operators discovered during the early 1990s, after the canneries no longer accepted tuna caught in association with dolphin, that fishing on floating objects (including FADs) with deeper nets will result in catches of bigeye tuna (which command the same price as equivalent sized yellowfin tuna), mixed with yellowfin and skipjack tuna. This has become the preferred strategy for U.S. vessels, and the success rate of FAD sets is very high. As a result, although some U.S. vessels have obtained dolphin mortality limits under the IDCP, no intentional fishing on dolphin has occurred.

On average, for 1993-1997, the U.S. fleet annually harvested approximately 12,000 mt of yellowfin tuna, 5,000 mt of bigeye tuna, and 19,000 mt of skipjack and other tuna from the ETP. At average exvessel prices of $1,000/mt for yellowfin and bigeye and $700/mt for skipjack, total catches by U.S. vessels of tuna in the ETP are valued at an estimated $30 million per year. The increase in landings of bigeye and skipjack tuna by the U.S. fleet in recent years is an indication of the change in fishing effort to school or log sets since these sets yield higher concentrations of skipjack tuna, on average. The continued relatively high catch of yellow fin tuna by the international fleet is indicative of the continuation of dolphin fishing in the ETP by non-U.S. vessels.

An average of six U.S. tuna purse seine vessels greater than 400 st (363 mt) carrying capacity fished in the ETP from 1993 to 1997. Most of these vessels fish for tuna throughout the year and are larger than 1,000 st (908 mt) carrying capacity; they are considered large business entities with more than $3 million gross revenues annually. In addition, the U.S. fleet includes a number of vessels that are 400 st (363 mt) or less carrying capacity and that occasionally target tuna in the ETP. From 1993 to 1997, an average of 18 vessels in this size category fished in the ETP each year. These smaller vessels fish for tuna on a seasonal basis, with tuna fishing generally completed by the end of October. Most of the year, the smaller vessels fish primarily for coastal pelagic fish species (sardine, mackerel, anchovy, market squid) off southern and central California. All small vessels are considered small business entities with total gross revenues below $3 million per year.

3.4.2 Foreign Purse Seine Fleets

The international fleet represents the majority of the fishing effort and carrying capacity in the ETP tuna fishery, with most of the total capacity consisting of purse seiners greater than 363 mt. These large vessels comprised about 87 percent of the total fishing capacity operating in the ETP in 1996 (IATTC, 1998). An average of 107 international vessels with a carrying capacity greater than 363 mt fished in the ETP during 1993 to 1997. In addition to these larger vessels, the international fleet contains smaller vessels less than 363 mt that target tuna in the ETP. From 1993 to 1997, an average of 63 international vessels ranging from 40.9 to 363 mt carrying capacity fished in the ETP each year. These smaller vessels fish for tuna year-round off the coast of Central and South America. Currently, Mexico has the largest fleet capacity of tuna purse seine vessels fishing in the ETP, with more than 41 vessels greater than 363 mt in 1997. Ecuador, Venezuela, and Vanuatu have 23, 22, and 12 large vessels, respectively.

In the 1993-97 period, the average annual total catch of tuna by all vessels (including the U.S.) using surface gear (which includes bait boats) was 393,900 mt, with a peak of 474,300 mt in 1997. Of this total, foreign fleets accounted for 359,600 mt per year. Purse seine vessels account for more than 98 percent of total surface gear vessel capacity in the ETP and more than 99 percent of total surface gear catch. ETP catch represented about 20 percent of total Pacific catches of the principal market species of tuna caught in the Pacific.

On average, from 1993 to 1997, the Mexican fleet harvested approximately 110,000 mt of yellowfin tuna, 21,000 mt of skipjack tuna, and 1,000 mt of bigeye tuna per year from the ETP. In comparison, on average, for 1993 - 1997, the Ecuadorean fleet annually harvested approximately 19,700 mt of yellowfin tuna, 32,000 mt of skipjack tuna, and 11,000 mt of bigeye tuna; the Venezuelan fleet annually harvested approximately 51,000 mt of yellowfin tuna, 5,000 mt of skipjack tuna, and 396 mt of bigeye tuna; and the Vanautuan fleet annually harvested approximately 22,780 mt of yellowfin tuna, 11,500 mt of skipjack, and 6,000 mt of bigeye tuna from the ETP.

Total catches of tuna by Mexican vessels in the ETP are valued at an estimated $125.7 million per year, of which yellowfin accounts for $110 million. Total catches of tuna by Ecuadorean vessels in the ETP are valued at an estimated $53 million per year, of which yellowfin accounts for $19.7 million. Total catches of tuna by Venezuelan vessels in the ETP are valued at an estimated $54.9 million per year, of which yellowfin accounts for $51 million. Total catches of tuna by Vanuatuan vessels in the ETP are valued at an estimated $36.8 million per year, of which yellowfin accounts for $22.8 million. Total catches by all nations in the ETP are valued at an estimated $365 million per year.

The higher proportional catch levels of bigeye and skipjack tuna by the Ecuadorean fleet are indicative of fishing on floating objects since such sets yield higher concentrations of skipjack tuna and bigeye tuna than school or dolphin sets. The high catch levels of yellowfin tuna by the Mexican, Venezuelan, and Vanuatuan fleets are indicative of dolphin-associated fishing effort in

the ETP.

3.4.3 U.S. Canned Tuna Processing Industry

The U.S. canned tuna industry is comprised of three major processing companies owned by multinational corporations. These three companies operate six fish canning plants in the United States and several in other parts of the world. Two canneries are located in Puerto Rico, two in American Samoa, and two in California. The principal function of all six U.S. processing facilities is to produce canned tuna for human consumption; however, five of the six plants produce fish meal and oil and other canned fish products as well. These products include canned salmon, sardines, mackerel, bonito, squid, and various petfood mixtures.

Virtually 100 percent of the tuna taken by purse seine in the ETP is processed and sold as canned, light-meat tuna. Most tuna caught in the ETP and delivered to U.S. processors is landed in Puerto Rico, although some may be delivered to the other U.S. processors. Tuna is essentially a commodity product worldwide, with a large number of producers, many if not most of which want to compete in the U.S. market, the largest canned tuna market in the world. Canned tuna is the single most popular fish product consumed in the U.S., and has held the number one spot with consumers for many years. U.S. consumption of canned tuna was 3.1 pounds per capita in 1997, down slightly from the previous four years, in which U.S. per capita consumption ranged from 3.2 to 3.5 pounds per capita.

During the years 1994 through 1997, the U.S. canned tuna industry produced an average of 645 million pounds of canned white and light meat tuna worth an average of $944 million per year. Canned light meat tuna accounted for three quarters of the average production and slightly over half of the average annual value (476 million pounds and $560 million, respectively).

For the past several years, U. S. production of canned tuna has accounted for 75 percent of the total U.S. supply. Canned tuna imports have accounted for 25 percent, and totaled 212,171,000 pounds in 1997. The top three exporting nations were Thailand, 99,513,000 pounds (47 percent of total imports); Philippines, 80,677,000 pounds (38 percent); and Indonesia, 20,911,000 pounds (10 percent). Several nations account for the remaining 5 percent, among which are Malaysia, Mexico, Namibia, Ecuador, Fiji, and Spain. Several ETP nations (Mexico, Costa Rica, Colombia, Ecuador, Venezuela) have processing facilities but most have exported little product to the U.S. in recent years due at least in part to embargoes now in effect. These nations' products have been exported to Europe and have been consumed in their national markets.

Processors obtain raw tuna for canning from both domestic and foreign suppliers, including fishing vessels that are owned by the companies. In 1997, the six U.S. canners purchased 249,379 st (226,235 mt) of light meat tuna (skipjack, yellowfin, bigeye and bluefin). Of this total, 83,835 st (76,055 mt), or 34 percent of light meat tuna purchases, were imported, and 165,544 st (150,181 mt), or 66 percent were purchased domestically.

Although tuna for canning is caught in many of the world's oceans, most of the tuna delivered to U.S. canners is caught in the Pacific Ocean. In 1997, 77 percent of the light meat tuna used by U.S. canners was caught in the western Pacific Ocean and 19 percent was caught in the ETP. The remaining 4 percent of light meat tuna for canning was caught in the Indian Ocean (2 percent) and in the Atlantic Ocean (2 percent).

In general, U.S. processors will benefit if the supply of raw tuna is maintained and, if possible, expanded if this can be achieved with no increase in costs. Thus, a lifting of current embargoes could benefit processors if it results in increased availability of raw product. This would likely be of more benefit to Puerto Rican and Californian canners than to American Samoan canners.

On the other hand, U.S. processors would not benefit from the lifting of embargoes if it results in greater competition in the market for canned tuna products. It should be noted in this context that the U.S. has a quota and tariff system that results in higher tariffs when imports of canned tuna in water reach the quota level. However, it is not clear that this higher tariff represents a significant barrier for many foreign producers, especially those with low costs.

3.4.4 Foreign Canned Tuna Processing Industries

Several IATTC member nations and signatories to the Agreement on the IDCP have tuna processing facilities, including Costa Rica, Mexico, Venezuela, Ecuador and Colombia. Of these, Mexico, Costa Rica, Colombia and Venezuela are currently under primary or secondary embargoes and are not able to export yellowfin tuna and products to the U.S. Total production by these processors is not known. However, a significant portion of the production reportedly has been exported to Europe. If these nations can obtain access to the U.S. market as well, they may be able to expand their production and reap the resulting economic benefits.

3.4.5 U.S. Consumers

U.S. consumption of canned tuna has averaged more than 3 pounds per person each year in the 1993-97 period, making tuna the single largest component of total U.S. consumption of seafood products. The U.S. market is the largest market in the world for canned light meat tuna. During the years 1994 through 1997, the U.S. canned tuna industry produced an average of 645 million pounds of canned white and light meat tuna, worth an average of $944 million every year. Canned light meat tuna accounted for three quarters of the average production and slightly over half of the average annual value (476 million pounds and $560 million, respectively).

3.4.6 Exporters, Importers and Consumers of Other Fish and Fish Products

Canned tuna is a worldwide commodity, and processors compete vigorously for various markets. U.S. and foreign processors compete with each other, and U.S. and foreign vessels compete to sell their raw tuna worldwide at the best possible prices. At the same time, canned tuna competes in the marketplace with other fish and fish products, many of which are imported to or

exported from the U.S. However, there is no information to allow an evaluation of the extent to which greater or lesser availability of raw and canned tuna affects markets in the U.S. and abroad for competing food products. For purposes of this assessment, only a qualitative assessment can be made, and even that will have to be limited to speculation in the absence of solid data.

3.4.7 U.S. Government

The U.S. government has significant responsibilities for the conservation of dolphins and the management of the ETP tuna fisheries. NMFS and the National Oceanic and Atmospheric Administration (NOAA) have the responsibility to implement the regulations, monitor compliance, document potential violations and prosecute violators, and conduct necessary research and program evaluations. This burden will become greater or lesser, depending on the decisions made in how to carry out the IDCPA.

3.4.8 Foreign Governments and Economies

A number of foreign governments have interests associated with this rulemaking. First, they have an interest in gaining access to the U.S. market for raw tuna for processing and for canned tuna. Second, in the long term, full cooperation and success in managing the tuna-dolphin problem should provide a basis for long-term cooperation in other fishery management issues, thus promoting the long-term high productivity of ETP tuna stocks and subsequent fishery yields. In turn, this should support economically healthy fishing fleets and sound contributions to their economies.

4.0 ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

4.0.1 Framework for Analysis of Impacts

Because there is limited ability to predict the responses of different nations and economic sectors when the interim final rule is effective, the ability to evaluate with certainty the impacts of the alternatives is also limited. In addition, the lack of data and models on non-U.S. tuna fisheries and on overall tuna and fisheries trade restrict the ability to evaluate with confidence the nature, magnitude and distribution of impacts under various alternative actions. Notwithstanding these limitations, this assessment attempts to evaluate qualitatively, and to some extent quantitatively, the ranges of possible impacts as fully as practicable.

For the purpose of evaluating impacts, the following assumptions about the expected responses of the relevant economic sectors will be made in this analysis:

1. Given the opportunity, the U.S. canned tuna processing industry will buy tuna caught by chasing and encircling dolphins, provided no dolphins were killed or

injured; however, U.S. vessels will likely not fish on dolphins, at least for the immediate future;

2. There will be 100% observer coverage in the ETP tuna purse seine fishery, and observers will report truthfully and record data accurately;

3. The proposed U.S. tuna tracking and verification program will be successful in tracking and verifying "non-dolphin-safe" and "dolphin-safe" tuna from domestic and foreign sources;

4. U.S. consumers will purchase "dolphin-safe" tuna under the new labeling standards;

5. The price differential between large and small tuna will continue.

There are two important considerations to keep in mind when reviewing this assessment. First, for purposes of this analysis, the above assumptions are believed to be valid for comparing the results of alternative regulatory decisions. However, this may not be borne out in the future. For example, some U.S. fishers have said they will not shift to dolphin fishing because they believe that U.S. processors will not purchase any tuna taken in dolphin sets, even if there were no mortality or serious injury to dolphin in the set or trip involved. If this is the case, then lifting embargoes and changing "dolphin-safe" labeling requirements may result in increased potential availability of raw tuna for U.S. processors, but not in more purchases of tuna, because the processors may not buy the tuna if it was taken on dolphin sets. In turn, nations that want to increase their exports of tuna to the United States may not have a market for that tuna if it was taken in dolphin sets.

On the other hand, larger U.S. vessels remaining in the ETP might shift to dolphin fishing. If so, this would add to the number of vessels requesting DMLs, and the DML per vessel would drop proportionately, all other things being equal. However, since the average dolphin mortality per vessel has been less than the DML per vessel level, this would probably not constrain any vessels' fishing behavior (i.e., all vessels would be able to fish on dolphin all year as long as the yellowfin tuna quota is not reached). Although annual mortality of dolphin would likely increase if the U.S. fleet resumed dolphin fishing, this mortality could be offset in part by a decrease in the level of accidental mortality of dolphin from sets on schools and floating objects. The net effect would probably be an increase in total dolphin mortality, for although accidental mortality levels are usually quite low (zero kills in 3 of the past 5 years), the incidental dolphin take from dolphin sets would more likely result in at least some mortality. Nonetheless, it would be unlikely that any stock-specific mortality limits would be reached solely as a result of the shift in U.S. vessels' strategy.

Second, and perhaps even more important, for purposes of this evaluation of the impacts of the preferred action and alternatives, NMFS has considered the status quo generally to represent a

continuation of management and fishery trends of the past 5 years. The United States and other nations have been cooperating closely in the voluntary IDCP to protect dolphins and have been moving toward resumption of management of the fisheries to maintain long-term fishery yields. Negotiation of the Agreement on the IDCP was exceedingly difficult, and many nations have invested significant political resources in the process. If the United States were now not to implement the IDCPA in a timely and reasonable manner, the current level of cooperation could disintegrate. If that were to happen, existing protection of dolphins (i.e., international mortality cap of 5,000 dolphins/year) would likely decline, dolphin mortality would increase (e.g., possibly above 5,000 dolphins/year), and cooperation in management of the fisheries to conserve the fish stocks would cease. While NMFS does not expect such an outcome, these "worst case" conditions could result if NMFS were to adopt the status quo alternative. Moreover, maintaining the status quo would be contrary to domestic law.

4.1 Impacts of Alternative 1: No Action Alternative (Status Quo)

4.1.1 Marine Mammals

Dolphin mortality in the ETP tuna purse seine fishery is managed by the IATTC under the auspices of the IDCP. Under the IDCP, incidental dolphin mortality in the ETP tuna purse seine fishery may not exceed 5,000 dolphins per year, although no annual stock-specific dolphin mortality limits are specified at this time. As a result of improved performance by foreign vessels in releasing dolphins associated with the fishery, and of less dolphin-associated fishing due to national laws and the current U.S. yellowfin tuna embargoes with nations that continue to chase and encircle dolphins to catch tuna in the ETP, the number of dolphins killed has been significantly reduced, from over 15,000 killed in 1992 to 3,000 dolphins killed in 1997. The embargoes have likely supported this progress as some nations have avoided fishing on dolphin to ensure that their tuna catches would be exportable to the United States. These embargoes have likely benefitted ETP dolphin stocks.

Current regulations prohibit U.S. tuna purse seine vessels from encircling dolphins to catch tuna in the ETP. However, there are occasional accidental kills of dolphins in school and floating object sets by U.S. vessels, as follows: 1994 - 106; 1995 - 0; 1996 - 0; 1997 - 0; and 1998 - 24. Under the status quo alternative, dolphin mortality due to fishing by the U.S. fleet is expected to continue to range from approximately 0 to 100 animals per year, while total ETP dolphin mortality would likely remain at the level of 1,900 to 5,000 animals per year, consistent with the IDCP. Recent data based on relative indices of abundance indicate that all stocks, including the depleted eastern spinner stock and the northeastern offshore spotted stock, are stable or slightly increasing, fluctuating around the same levels for the past two decades. Although mortality in the ETP tuna purse seine fishery on all dolphin stocks is currently at sustainable levels and below (0.2 percent of the estimated minimum population abundance) (Table 1), unless the Agreement on the IDCP is implemented, annual stock-specific mortality could exceed biologically sustainable levels.

Table 1. Per-stock estimates of abundance (N) and minimum abundance (N_{min}), mortality limits, and 1995-97 dolphin mortalities.

Declaration of Panama

Dolphin Stock	N_{min}[1]	1995 mortality[2]	1996 mortality[2]	1997 mortality[3]	Sustainable Removal Level[5]	0.2% Nmin 1996-00	0.1% Nmin 2001
Northeastern spotted	648,920	1,060	818	715	6,165	1,298	649
Western/ southern spotted	1,145,149	708	545	1,024	17,177	2,290	1,145
Coastal spotted[4]	22,500			26		45	22
Eastern spinner	518,495	664	450	391	2,852	1,037	518
Whitebelly spinner	871,982	422	447	498	13,080	1,744	872
Northern common	562,719	9	77	9	8,441	1,125	563
Central common	207,298	192	51	114	3,109	415	207
Southern common	1,845,561	0	30	58	36,911	3,691	1,846
Dolphins less commonly caught in ETP tuna fishery:							
Striped dolphins	1,745,900			80		3,492	1,746
Fraser's dolphin	219,800			0*		440	220
Bottlenose dolphin	192,300			10		385	192
Risso's dolphin	128,900			0*		258	129
Rough-toothed dolphin	112,200			20		224	112
Pilot whale	142,700			5		285	143
Melon-headed whale	31,200			0*		62	31
Pacific white-sided dolphin	8,400			0*		17	8
Pygmy killer whale	30,300			0		61	30

False killer whale	24,400			0		49	24
Killer whale	6,300			0		13	6

*Mortality has occurred on this stock or species between 1986 and 1997.
[1]Minimum abundance estimate (N_{min}) = N/exp(0.842 x ($\ln(1 + CV^2)$)^{½}).
[2]Hall, M.A. and C. Lennert. 1996. Incidental mortality of dolphins in the eastern Pacific Ocean tuna fishery in 1995. IWC Scientific Committee, unpublished paper. SC/48/SM4:1-8.
[3]IATTC Annual Report, 1998.
[4]IATTC, October 1998 Report.
[5]Gerrodette, T. 1996. Table 2 (column 1).

4.1.2 Tuna

Under the status quo alternative, the total annual amount of tuna caught in the ETP purse seine fishery would remain at existing levels (about 450,000-475,000 mt/year), with the current size composition of large and small yellowfin and bigeye tuna being maintained and skipjack contributing a moderate share of total catches. The stocks of tuna would remain healthy, assuming that the IATTC is able to establish effective overall harvest and/or effort limits, although yields of yellowfin and bigeye would be lower than could be achieved if all effort was targeted on larger fish. Under the status quo alternative, there would continue to be substantial waste of tuna (about 30,000 mt per year) from the catch and discard of small yellowfin, bigeye, and skipjack tuna in the floating objects fishery, and the risk of recruitment overfishing would be substantial if there were no international cooperation to limit harvest levels and/or effort.

4.1.3 Sea Turtles

The most recent data from the IATTC indicate that an average of 860 sea turtles per year were caught and killed in the entire ETP purse seine fishery from 1993-98 (IATTC Annual Report, 1999). The data indicate that on average, per year, more than twice as many sea turtles were caught and killed in floating object sets (~426) verses dolphin sets (~183) or school sets (~252). Under the status quo alternative, total incidental mortality of sea turtles in the ETP purse seine fishery would likely remain at recent levels (about 860 per year), with a small portion of that mortality attributable to U.S. vessels' fishing activities. United States vessels would continue to fish on floating objects in which there is occasional capture (just over 25.6 animals per 1,000 sets) of sea turtles.

4.1.4 Other Finfish

Under the status quo alternative, the incidental catch of other finfish by the ETP purse seine fishery is expected to remain at the levels of the past 5 years, as there are no expected changes in fishing strategy or effort levels. The most dramatic finfish bycatches are in the FAD fishery, in which the estimated per year bycatch of non-tuna finfish during 1995-1997 in FAD sets is

approximately 1.94 million fish (almost two-thirds are triggerfish, other small fish, and baitfish). The estimated finfish bycatch in school fishing is an order of magnitude lower, with about 180,000 non-tuna fin fish per year, with small fish and small bait making up more than half the bycatch and yellowtail being an important component (about 27 percent of the total). In general, the vast majority of the finfish bycatch from floating object fishing is discarded overboard, dead. Under the status quo alternative, the relatively high level of discarded finfish during floating object fishing would be expected to continue.

4.1.5 U.S. Purse Seine Fleet

The size of the U.S. ETP purse seine fleet has changed from a high of 155 large vessels in 1976 to a low of five large vessels in 1995. Because of shifting economic conditions, a prohibition on setting on dolphin to catch tuna (the status quo), and a treaty that provides U.S. vessels with access to rich western Pacific fishing grounds, many vessels in the U.S. purse seine fleet have either re-flagged or reconfigured their nets to fish in the western Pacific. Currently there are six large U.S. purse seine vessels fishing most of the year in the ETP, while another 14-18 small purse seine vessels (363 mt or less carrying capacity) operate on a seasonal basis in the ETP. The six large vessels now participate only in the floating object and schoolfish fishery in the ETP. The number of vessels, level of fishing effort, and tuna caught and landed by U.S. vessels under the status quo alternative are not expected to change significantly. Under the status quo alternative, the U.S. fleet would be expected to continue fishing on floating objects and schoolfish in the ETP and harvest approximately 12,000 mt of yellowfin tuna, 5,000 mt of bigeye tuna, and 19,000 mt of skipjack and other tuna annually (average harvest levels of the 1993-97 period). At an estimated average exvessel price of $1,000/mt for yellowfin and bigeye and $700/mt for skipjack, total catches by United States vessels of tuna in the ETP are valued at an estimated $30 million per year.

4.1.6 Foreign Purse Seine Fleets

Foreign purse seine fleets use a variety of techniques to fish for tuna in the ETP. Some nations prohibit their vessels from fishing on dolphin, while others promote dolphin fishing because of its efficiency and the higher overall yellowfin tuna yields that might result from fishing solely on dolphin. Under the status quo alternative, foreign fleets would be expected to continue fishing in current patterns, with some nations fishing on dolphin, others on floating objects and schools, and others using a mix of strategies. Foreign fleets would be expected to catch about 443,000 mt of tuna per year, the level of foreign catch in the ETP in 1997.

4.1.7 U.S. Canned Tuna Processing Industry

The status quo alternative would not affect the U.S. canned tuna industry because activities by U.S. and foreign vessels would not be expected to change from the 1997 pattern. In 1997, the six U.S. canneries purchased 249,379 short tons of light meat tuna (skipjack, yellowfin, bigeye and bluefin). Approximately 22,000 mt of this light meat tuna were caught by U.S. purse seine

vessels in the ETP. This level of activity associated with ETP fisheries is expected to continue under the status quo alternative. The market restrictions under the status quo alternative do not allow raw or processed tuna into this country from vessels that do not fish in a manner comparable to the dolphin protection program that is in place in the United States. Under the status quo alternative, these restrictions would continue.

4.1.8 Foreign Canned Tuna Processing Industry

Under the status quo alternative, there should be no impact on foreign tuna processors. The fishing patterns of the U.S. and foreign fleets would not be expected to change. Therefore, there should be little or no change in the production patterns of foreign canneries.

4.1.9 U.S. Consumers

Under the status quo alternative, no change would be expected in the consumption patterns of U.S. consumers or in the amount and variety of product from which they can choose. Current market restrictions do not allow tuna into this country that is not fished in a manner comparable to the program that is in place in the U.S., and this restriction would be maintained under the status quo alternative. All tuna in U.S. markets would be dolphin-safe under current definitions because only tuna labeled dolphin-safe can be sold in the U.S. Only a small portion of the canned tuna consumed in the U.S. would originate from tuna caught by U.S. vessels in the ETP since the U.S. ETP catch comprises such a small percentage of the total production of canned tuna by U.S. producers. All U.S.-caught ETP tuna would be dolphin-safe under current definitions since U.S. vessels could fish only in a dolphin-safe manner and dolphin-safe tuna from the western Pacific and other parts of the world would still be available under the status quo alternative.

4.1.10 Exporters, Importers and Consumers of Other Fish and Fish Products

The status quo alternative would not be expected to affect exporters, importers, or consumers of any other fish or fish products.

4.1.11 U.S. and Foreign Governments

The current tracking and verification system relies primarily on the FCO. The FCO is used to track non-fresh tuna exported into the United States. The NMFS alerts the U.S. Customs Service (USCS) each time an embargo is enacted against a country. USCS utilizes the FCO to determine the country of origin for tuna imported into the United States. Based on the FCO and the current embargo status of the exporting nation, USCS would either allow the tuna into the United States or seize the tuna. Currently the vessel name is required on the FCO for ETP harvests. However, the vessel name is not required on the FCO for non-ETP harvests. Under the status quo alternative, this process would continue.

Under the status quo alternative, the United States would play a minor role in monitoring the abundance and trends in dolphin populations in the ETP. Most data on dolphin abundance and distribution would continue to be collected by IATTC observers under the status quo alternative rather than by NMFS research cruises.

4.2 Impacts of Alternative 2: Interim final rule (Preferred Action)

4.2.1 Marine Mammals

The interim final rule would allow large (> 363 mt carrying capacity) U.S. fishing vessels to deploy a net on or encircle dolphins in the course of tuna purse seine fishing in the ETP. Nevertheless, as described in section 4.0.1, U.S. purse seine vessels currently fishing in the ETP (U.S. or foreign) may choose not to switch to setting on dolphins to catch tuna in the ETP because tuna processors may not purchase tuna caught in this manner. Moreover, under the status quo, although U.S. vessels that generally fish in the western Pacific could enter the ETP and not fish on dolphins, they generally have chosen not to due to observer and dolphin safety equipment requirements that apply regardless of fishing strategy. If large U.S. purse seine vessels do not switch to setting on dolphins, and the level of incidental dolphin mortality from foreign purse seine fishing in the ETP remains at current levels, the expected impacts on marine mammal stocks from the preferred alternative would be similar to those impacts identified under section 4.1.1.

On the other hand, U.S. purse seine vessels might be economically motivated to switch to setting on dolphins in the ETP because these sets yield larger-sized tuna, larger concentrations of yellowfin tuna, and less bycatch and undersized tuna than log or school sets. Consequently, dolphin sets have a higher catch per unit effort and possibly more revenue for a full vessel. In addition, if the U.S. tuna embargoes were lifted under the preferred alternative, the ETP foreign tuna purse seine fleet may switch to more dolphin sets to catch tuna for the same reasons U.S. purse seine vessels might switch to setting on dolphins.

As described in section 4.1.1, under the Panama Declaration, the IATTC currently limits total dolphin mortality in the entire ETP tuna purse seine fishery to 5,000 dolphins per year. Similarly, the 1998 Agreement on the IDCP, once in force for 6 months, limits total annual incidental mortality to 5,000 dolphins in the ETP tuna purse seine fishery, with a goal of progressively reducing mortalities to levels approaching zero. In order to reach the zero mortality goal, the 1998 Agreement on the IDCP also requires that nations establish a per-stock, per-year dolphin mortality cap for each stock of dolphins associated with the fishery. Up until the year 2001, whenever the annual mortality of 0.2 percent of the "minimum estimated abundance" (N_{min}) is exceeded for *any* stock of dolphins, all sets on that stock and on any mixed schools containing members of that stock will cease for that year. Beginning in 2001, whenever the annual mortality of 0.1 percent of N_{min} is exceeded for *any* stock of dolphins, all sets on that stock and on any mixed schools containing members of that stock will cease for that year. In addition, whenever the annual mortality of 0.1 percent of the N_{min} is exceeded for either the

eastern spinner or northeastern spotted dolphin stocks, the parties to the IDCP will conduct a scientific review and assessment and consider further recommendations. Such a stock-specific program will ensure that the level of annual stock-specific dolphin mortality in this fishery is biologically sustainable for each affected dolphin stock.

Most marine mammal scientists conclude that pelagic dolphin stocks, even those with an unknown status, should be able to withstand (sustain) annual removal levels of between approximately 1-2 % of N_{min} (Barlow et al., 1995). For dolphin stocks in the ETP, estimated removal levels of 1-2% of N_{min} are listed in Table 1 (columns 7 and 8). Estimated incidental and accidental mortality for all dolphin stocks in the ETP have been *below* 0.2% of N_{min} for the years 1995-97 (see Table 1, columns 3,4 and 5). Limits on mortality of individual dolphin stocks associated with the ETP tuna purse seine fishery will be held to the limits (0.2 and 0.1% of N_{min}) established under the Agreement on the IDCP. Total mortality should decrease below these stock-specific mortality limits because companion measures such as the captains' certification and training programs should result in improved performance by most skippers and removal of poor performers from the fishery. Thus, the preferred alternative is expected to result in improved protection for dolphin compared to the status quo. For these reasons, allowing large U.S. purse seine vessels to deploy a net on or encircle dolphins in the course of tuna purse seine fishing in the ETP and allowing the import of yellowfin tuna catch in this manner from ETP tuna purse seine fishery should not have a significant impact on any dolphin stocks in the ETP.

4.2.2 Tuna

Because fishing on log and/or school sets in the ETP results in a much greater amount of discard of undersized tuna compared to setting on dolphin, sets on floating objects could jeopardize the sustainability of ETP tuna stocks, unless more practical means of locating tuna are developed. An examination of the differences between set types in short tons of tuna discarded per set by U.S. vessels fishing in the ETP during 1989-92 showed that the expected discard weight of tuna was 100 times higher for log sets and 10 times higher for school sets than for dolphin sets. Hypothetically, if all dolphin sets were replaced with log sets, the estimated discards would be 10-25 percent of the estimated average number of yellowfin recruits to the fishery each year. If this discard is combined with an estimated 25 percent reduction in tons of yellowfin tuna caught that would result from concommitant changes in the size structure of the landed fish (*in* Punsley et al., 1994), the fishery could lose 30-50 percent of the approximately 98 million individual yellowfin tuna estimated to recruit to the fishery each year (Edwards and Perkins, 1998). Sustained removals of this magnitude, combined with environmental variability, could pose problems for long-term sustainability of the ETP yellowfin tuna stock. In addition, fishing exclusively on smaller tuna can result in "recruitment overfishing" whereby smaller, reproductively immature fish are harvested and thereby do not contribute to future recruitment of the population. Harvesting larger tuna both decreases risk of overfishing, because more fish reach maturity, and increases sustainable yields, because the average size of the fish taken is greater.

Under the preferred alternative, NMFS expects that a portion of the foreign ETP purse seine fleets' effort would shift from school and floating object sets to dolphin sets. If this occurred on a large enough scale, and assuming there was effective control of overall tuna catches to prevent overfishing, there would be an increase in the average size of yellowfin taken in the purse seine fishery and of bigeye taken in the longline fishery. This could increase the overall yield of yellowfin and bigeye as well. For example, under current conditions, the IATTC estimates that the fishery could support an annual harvest of 250,000 mt or more of yellowfin tuna, but in 1998, the quota was limited to 225,000 mt due to the size composition of the landings and the probable impact of catches of small yellowfin on future yields and spawning stock. The higher quotas would be premised on catches consisting of fish of the size generally associated with the dolphin fishery.

Under the preferred alternative, a decrease in the catch and occasional waste of small yellowfin and bigeye as well as skipjack tuna would be expected if the ETP purse seine fleets' effort shifted from school and floating object sets to dolphin sets. In addition, the overall yield of yellowfin and bigeye stocks would increase over time, and there would be less risk of recruitment overfishing. Landings of bigeye by purse seiners would likely decrease, while landings of bigeye by longline vessels would likely increase. Lastly, landings of skipjack tuna would probably decline, although this decline would probably not affect the skipjack stock measurably. Little is known about the skipjack stock, however, which only recently became a significant component of the catch.

None of the expected benefits to tuna stocks are expected to result from shifts in fishing strategy by the U.S. fleet. The preferred alternative would allow U.S. vessels to fish on dolphin, and if this occurred, there could be some reduced catches of small yellowfin and bigeye tuna, and less waste from discard of tuna too small to sell to processors. However, U.S. vessels are expected (at least initially) to continue fishing on schools and floating objects. Furthermore, given the relatively small portion that U.S. catches contribute to the overall ETP catch of yellowfin and bigeye tuna, even a total shift to fishing on dolphins probably would not have a significant impact on yields from those stocks, while there would be a loss of catches of skipjack tuna.

As noted, the benefits to conservation of tuna are dependent on effective control of total fishing mortality. This is more likely under the preferred alternative, which would be viewed as the United States meeting its commitment under the Agreement on the IDCP. Indeed, after the enactment of the IDCP, several governments agreed that the IATTC should take an active role in managing all tuna fisheries in the ETP for the benefit of current and pending IATTC members. If the preferred alternative is not implemented, these nations may conclude that there is no benefit in cooperating, and the fishery conservation and management being pursued in the IATTC would not be effective, causing serious adverse consequences for the tuna stocks of the region.

4.2.3 Sea Turtles

The preferred alternative would allow large U.S. tuna purse seine vessels to set on dolphins to

catch tuna in the ETP, but such fishing is not expected to occur, at least initially. United States purse seine vessels are expected to continue fishing on schools and floating objects at the same approximate levels as in the 1993-98 period. Therefore, NMFS expects that there would be no change in the number of sea turtles taken annually by U.S. vessels in the ETP, and the impact to sea turtles would be similar to the impact of the status quo alternative (see section 4.1.3). If U.S. purse seine vessels in the ETP shifted from floating object fishing to setting on dolphins to capture tuna, the level of sea turtle mortality would decline because the take rate of sea turtle in dolphins sets (5.8 sea turtles per 1,000 sets) in much less than in log sets (25.6 sea turtles per 1,000 sets). Similarly, if there is a substantial shift in foreign ETP purse seine fishery to sets on dolphins to capture tuna (due to lifted embargoes), the level of sea turtle mortality would also decline. Thus, the net effect of the preferred alternative is expected to be beneficial to sea turtles in the ETP.

4.2.4 Other Finfish

If there is a substantial shift in international fleets' fishing strategy to increase dolphin fishing, there would be a decrease in sets on floating objects and schools. As a result, incidental catches and discards of non-tuna finfish would decline. A total shift (including U.S. vessels) would essentially eliminate any bycatch concerns related to non-tuna fish species because there is almost no non-tuna finfish bycatch in dolphin sets. However, a total shift is not expected. First, not all vessels have the equipment to switch to dolphin fishing. Second, many vessel operators may prefer the FAD fishery because of its relative ease and possible cost advantages. Third, the U.S. fleet is not expected to shift because (at least initially) U.S. vessel owners do not expect U.S. processors to buy tuna taken in dolphin sets. Thus, the net effect of the preferred alternative is expected to result in a decrease, but not elimination of, finfish bycatch. The amount of decrease will be roughly proportional to the extent to which effort shifts from floating object sets to dolphin sets.

4.2.5 U.S. Purse Seine Fleet

The preferred alternative would not have a significant economic impact on the U.S. fleet in the ETP. The larger vessels would have the opportunity to fish on dolphin but are not expected to take that opportunity, at least initially. They would be expected to continue fishing in the manner and at the same level as the past few years. The only action in the interim final rule that directly restricts smaller vessels (i.e., those with 363 mt carrying capacity or smaller) is the formal prohibition of setting on dolphin. As a practical matter, however, these vessels have not set on dolphin in the past, largely because they do not have the history of fishing on dolphin and may lack the physical capability to carry the needed equipment for successful fishing on dolphin. Therefore, this proposed action would have no impact on these vessels. There are no substantial compliance costs for small vessels. Similarly, unlike the paperwork burdens that would be imposed on large vessels, no such burden would be imposed on small vessels.

While the proposed action (including lifting trade restrictions, see 2.3.2) may result in increased

supply of raw tuna to U.S. and foreign processors, NMFS does not expect that lower prices will be paid to fishing vessels, regardless of their size. Raw tuna for canning is a commodity for which prices are generally set on an international basis. The prices paid for raw product are generally a result of cumulative international demand for and supply of raw product throughout the year. While the overall effect of the international dolphin conservation program may be to maintain or increase the long-term yield from the yellowfin tuna stock in the ETP (the annual yield could increase to 255,000 mt from the 1998 quota level of 225,000 mt), when considered in the context of total worldwide supply of over one million tons of raw tuna for canned light meat tuna, the incremental supply would not likely affect prices paid to fishing vessels. Thus, the proposed actions would not likely affect revenues to small or large U.S. tuna fishing vessels in the ETP.

The preferred alternative could benefit small U.S. vessels due to the possible lifting of tuna embargoes. For example, the landings by small vessels in southern California could be shipped to Mexico for processing and then ultimate reentry to the U.S. for sale as canned product. This would effectively increase the marketing potential for small vessels and might result in an increase in the price paid for their fish.

Under the preferred alternative, operators of large U.S. purse seine vessels would be required to obtain permits, maintain fishing logbooks and records on the wells into which dolphin-safe and non-dolphin-safe tuna are loaded, and provide certifications of their fish as "dolphin-safe" or "nondolphin- safe" so that processors can verify that tuna are accurately labeled after canning. NMFS estimates that the overall paperwork burden will be 82 hours per vessel per year. A request for clearance of this paperwork burden under the Paperwork Reduction Act has been submitted to the Office of Management and Budget.

4.2.6 Foreign Purse Seine Fleets

The preferred alternative would allow tuna catches of large foreign purse seiners to be exported to the United States, provided the international requirements are met. NMFS can not estimate with any confidence the results of this change. The action is expected to result in some shift of effort from floating object and school sets to dolphin sets. This could lead to marginal improvements in foreign vessels' performance, as dolphin fishing results in catches of large tuna that bring higher prices and could result in overall improvement in long term productivity of the yellowfin stock. If so, yellowfin catches would increase and bigeye and skipjack catches would decrease. Foreign vessels also would gain from the potential to sell fish to U.S. processors rather than have to rely on other foreign or domestic markets. On the other hand, foreign purse seine fleets may have to be responsive to their own national laws as well as market conditions associated with other measures (e.g., limitations on the use of certain gear) and with worldwide and regional supply of and demand for raw tuna. Overall, the preferred alternative is expected to provide some benefit to foreign purse seine fleets, but the benefit may not be large.

4.2.7 U.S. Canned Tuna Processing Industry

The U.S. canned tuna processing industry would benefit somewhat from the proposed action, because if the embargoes are lifted, availability of and more sources of raw product for canning would be expected to increase. NMFS expects that U.S. processors would purchase tuna that is "dolphin-safe" under the revised definitions, at least in part because this could consist of the availability of larger fish, from which canning yields are greater. However, there is no assurance that all the fish caught in the ETP will be made available to U.S. processors. Several ETP nations also have domestic processing firms that would compete for ETP catches in the future. Also, any gain in production of yellowfin products would to some extent be offset by reduced production of bigeye and skipjack products. Therefore, when looked at in the overall worldwide processing industry context, any gain to U.S. processors would not likely be large.

Allowing large U.S. tuna purse seine vessels to set on dolphins to catch tuna in the ETP could slightly increase the supply of larger yellowfin tuna from U.S. vessels available to the U.S. canned processing industry, if those vessels in fact turned to dolphin fishing. However, if the U.S. fleet continues to fish in the same manner as the past several years, as is expected, there would be no impact on U.S. processors.

Not all processors may be affected uniformly. For instance, canners located in California could arrange to have fish canned or partially processed in Ensenada, Mexico, which might adversely affect employment in southern California facilities. Similarly, small vessels could land in the United States and have their fish shipped to Ensenada for processing and then ship the canned product back to the United States.

United States processors would be required to maintain and make available to U.S. inspectors records of their processing of ETP tuna so that compliance with the tracking system can be confirmed and effectiveness and costs of the program evaluated. The total paperwork burden is estimated to be 211 hours per year. A request has been submitted to the Office of Management and Budget for clearance of this paperwork burden under the Paperwork Reduction Act.

4.2.8 Foreign Canned Tuna Processing Industry

The foreign canned tuna processing industry would likely gain from the proposed alternative. As long as the nation could provide the necessary documentation, all "dolphin-safe" tuna products from that nation could enter the United States. Nations currently embargoed would be able to export their tuna products to the United States. This could expand the markets available to that nation and perhaps provide a more stable, nearby market. Given that some other markets (e.g., Europe) may be fully supplied by their own fleets (purse seine fleet capacity in Spain and France appears to be expanding), the availability of the U.S. market may be very appealing to producers in the nations active in the ETP. However, note that any increase in markets may prompt foreign companies to invest in new facilities that would result in greater competition for raw product. Furthermore, while there could be an increase in the supply of yellowfin for processing, there could be an offsetting reduction in supply of bigeye and skipjack for processing. In addition, some foreign processors might benefit from access to landings by U.S. vessels in southern

California. These processors could then export canned product back to the U.S. market. In the final analysis, any gain to foreign processors would not likely be large.

To the extent foreign processors export canned tuna to the U.S., their shipments will have to be accompanied by the FCO, as modified, to implement the new tuna tracking and verification system.

4.2.9 U.S. Consumers

The proposed action may result in increased availability of ETP-origin canned product, if overall yields from ETP stocks increase and there is increased ETP-origin product available from both domestic and foreign producers. However, overall light meat tuna consumption is not likely to be significantly affected, as the marginal increase in supply would not likely be very large. As noted earlier, canned light meat tuna is an international commodity with huge worldwide production. An increase in yellowfin product resulting from shifts to dolphin fishing would be countered to some extent by decreases in bigeye and skipjack production. Allowing larger U.S. vessels to fish on dolphin is not expected to significantly affect U.S. consumers. Neither the supply of nor price of canned product would be expected to change, and consumers would still have full choice whether to buy "dolphin-safe" light meat tuna, or solid white meat tuna, or other tuna products.

4.2.10 Exporters, Importers and Consumers of Other Fish and Fish Products

Exporters, importers, and consumers of other fish and fish products are not expected to be affected significantly by the preferred alternative. Slight changes in the availability of canned light meat tuna should not greatly affect the supply of or prices for other fish products such as unprocessed tuna or other fish (e.g., non-tuna and shrimp).

Importers of canned tuna from ETP nations would still need to obtain and hold records for U.S. inspection and possible copying for purposes of verifying accurate labeling and evaluating the effectiveness of the tracking system.

4.2.11 U.S. and Foreign Governments

As described in section 4.1.11, the current tracking and verification system relies primarily on the FCO, which would be used to track non-fresh tuna exported into the United States. NMFS alerts the USCS each time an embargo is enacted against a country. USCS utilizes the FCO to determine which country the tuna is being exported from. Based on the FCO, USCS will either allow the tuna into the United States or seize it. Currently, the vessel name is required on the FCO for ETP harvests. However, the vessel name is not required on the FCO for non-ETP harvests.

Under the preferred alternative, a new international tracking and verification system would be

established to ensure that the governments have the capability to confirm that canned tuna are correctly labeled. This system would add to the paperwork burdens for industry with associated paperwork management burdens for NMFS, the USCS, and foreign parties. The system would allow NMFS to monitor compliance and evaluate the effectiveness of the new regulations through a combination of review of documentation and spot checks and inspections of vessels and processing facilities. NMFS staff may meet U.S. vessels as they arrive in port and unload or may visit domestic processing facilities to determine that the records for any particular canning run properly support the designation of tuna as dolphin-safe. NMFS estimates that the total cost of the new tuna tracking and verification program is $300,000 per year for the U.S. Government, including the cost of new staff, support staff, and travel and other operational expenses.

Under the IDCPA, the U.S. is also substantially more involved in estimating the abundance and trends in populations of dolphin than it has in recent years. The IDCPA mandates required research of population abundance surveys and stress studies. Independent research cruises are being carried out to provide a more systematic and scientific basis for estimating the status of dolphin populations than is provided by observers' records of sightings of dolphin schools and interactions in the fishery. The IDCPA authorizes a total of $12,000,000 for the years 1998-2001 for these and other research projects.

4.3 Impacts of Alternative 3: Adjustments to the Preferred Alternative

4.3.1 Marine Mammals

Either of the three alternative interpretations of the IDCPA language pertaining to DMLs would be expected to result in faster reductions in dolphin mortality from intentional sets on dolphin than would be expected under the preferred alternative and the status quo. In all cases, future DMLs (in aggregate or by vessel) could never increase; they would always be limited to the lowest DML determined in aggregate for all fleets internationally, nationally, or received by any single vessel, in any prior year. However, in the long run, if DMLs approach zero, there would be little or no fishing on dolphin, and possibly more fishing on schools and logs. This conclusion assumes that the IDCP remains intact, which may not be the case if the United States pursues an approach that seems clearly different from what the other parties thought they were agreeing to in the Agreement of the IDCP. If the IDCP were not to survive, foreign fleets may simply fish on dolphin without regard to established dolphin mortality limits. In that case, total mortality of dolphin would likely rise to levels higher than under the status quo or the preferred alternative.

4.3.2 Tuna

NMFS assumes that the IATTC will take action to establish more conservative quotas, if needed, to ensure the long-term maintenance of tuna stocks at levels which will not threaten the future reproduction of yellowfin and bigeye stocks. If quotas are reduced but fleet capacity is not constrained, the competition for fish will become more intense, with the result that it will be more difficult to agree on conservative quotas in the IATTC decision process. There would be a

higher risk of long-term adverse effects on the tuna stocks other than skipjack tuna. Again, this assumes that the IDCP would survive and that the IATTC would be able to manage catch and/or effort to maintain the productivity of the stocks. If this did not happen, the likely result over the long term would be overfishing of the stocks and possibly collapse of the fishery.

4.3.3 Sea Turtles

Under alternative 3, impacts to sea turtles would likely be the same as the preferred alternative.

4.3.4 Other Finfish

Under alternative 3, impacts to other finfish would likely be the same as the preferred alternative.

4.3.5 U.S. Purse Seine Fleet

Alternative 3 would not be expected to affect the U.S. purse seine fleet because no U.S. vessels are expected to fish on dolphin in the near future, and thus there would not be an immediate impact from limits on overall or individual vessels' DMLs. Prohibiting sets on dolphin one-half hour before sundown would have a negligible impact on the U.S. fleet, assuming that none of the vessels intend to set on dolphin. The more stringent tuna tracking and verification system under alternative 3 would pose a greater paperwork and monitoring burden for U.S. vessels compared to the status quo and the preferred alternative. However, the burden is relatively slight for vessels that do not set on dolphin. The requirement that every unloading be monitored, for vessels fishing on dolphin, may be a problem because there is no assurance that a U.S. inspector will be on site at the time that the vessel would like to unload its tuna. The monitoring requirement could disrupt unloading schedules for some vessels in such situations.

4.3.6 International Purse Seine Fleets

Either of the alternative interpretations dealing with embargoes would likely pose significant problems for foreign ETP purse seine fleets. While overall dolphin mortality has been decreasing over time, there is no assurance on any given set or trip that DMLs at the vessel level can steadily be decreased to near zero. The IDCP commits the parties to reductions in mortality but did not presuppose that the aggregate mortality limit for any given year would be premised on the lowest limit ever set for any prior year. NMFS anticipates that per-year per-stock limits will be set such that mortality of any stock will never exceed 0.1% of N_{min} of that stock. Most nations would consider a requirement for DMLs to always be lower as an abrogation of the Agreement on the IDCP. The practical effect of such interpretations is to make it likely that any DMLs will be more quickly met each year and that over the long term there would be a shift of effort to schools and floating objects. This would lead to lower overall tuna catches and presumably less revenue in the future compared to the status quo and the preferred alternative. Some vessels would probably have to cease fishing; others would remain active but perhaps at greatly reduced production level. There would likely be increased idle capacity as tuna quotas would be lowered

and quotas would be reached before the end of the year. Most ETP nations do not have alternate areas in which to fish.

4.3.7 U.S. Canned Tuna Processing Industry

In the short term, this alternative would not have a significant impact on U.S. processors, as the availability of tuna from the ETP would not change substantially from the status quo. If the more stringent tuna tracking and verification program were in effect, the burden on U.S. processors could increase. As noted, the requirement that a U.S. inspector be on scene to inspect each unloading could result in some disruption of unloading schedules. However, in many instances, processors may have two or three vessels ready to unload at any time, so this disruption may not be as serious as for individual vessels. There would be added paperwork burdens compared to the status quo or the preferred alternative.

4.3.8 Foreign Canned Tuna Processing Industry

In the short term, this alternative would have mixed results for foreign processors.

4.3.9 Importers and Exporters of other Fish and Products

There would not likely be any substantial impacts on importers and exporters of other fish and fish products from this alternative.

4.3.10 U.S. Government

The more stringent tuna tracking and verification program would cost more to implement than the preferred alternative or the status quo. There would need to be more staff for inspection of unloadings, at least in the short term, although the need for inspections in the long term might decline if there were less fishing on dolphin and thus less need to track dolphin-safe and non-dolphin-safe tuna at the unloading level.

4.3.11 Foreign Governments

The more stringent tuna tracking and verification program would cost more to implement than the preferred alternative or the status quo. There would need to be more staff to inspect unloadings, at least in the short term, to ensure accurate identification of dolphin-safe and non-dolphin-safe tuna. More importantly, if the United States applies either of the alternate approaches dealing with DMLs on the international or vessel level, most parties to the Agreement on the IDCP would conclude that the United States has gone beyond that agreement. Almost all would object to the unilateral action by the United States to impose an arbitrary limit on aggregate international mortality of dolphin. Most other nations would object to action by the United States that might benefit disproportionately fleets that have historically fished on dolphin at the expense of those that historically fished on schools and floating objects but would like to

shift to dolphin fishing.

4.3.12 U.S. Consumers

The more stringent tuna tracking and verification program should result in greater confidence for consumers that tuna is accurately labeled. However, there would be greater potential for confusion in the use of an official mark for dolphin-safe tuna associated with one set of standards and for the use of alternate mark for dolphin-safe tuna under a separate set of standards. If DMLs decline over time as expected under this alternative, then the amount of non-dolphin-safe tuna available would likely decline. As a practical matter, however, it is reasonable to expect that U.S. consumers would generally try to limit purchases of tuna to dolphin-safe tuna unless there is a significant price differential. Given the international nature of the tuna market, and the wide availability of dolphin-safe tuna under any circumstances, such price differentials are not expected.

5.0 FINDING OF NO SIGNIFICANT ENVIRONMENTAL IMPACT

For the reasons discussed in this Environmental Assessment, the National Marine Fisheries Service has determined that approval of the interim final rule to implement the International Dolphin Conservation and Protection Act through: (1) restrictions on U.S. purse seine vessels fishing in the eastern tropical Pacific Ocean (ETP); (2) establishment of labeling standards for tuna caught in the ETP and labeled as dolphin-safe; (3) relief of current market restrictions on the sale of non-dolphin-safe tuna in the United States; (4) establishment of a tracking and verification system to track dolphin-safe tuna from capture in the ETP to final sale; and (5) abolishment of the current comparability standards applied to other ETP harvesting nations and establishment of new standards for importing yellowfin tuna caught in the ETP into the United States, would not significantly affect the quality of the human environment, and that the preparation of an environmental impact statement on these actions is not required by Section 102(2) of the National Environmental Policy Act or its implementing regulations.

_____ _____

Date

6.0 DETERMINATIONS UNDER REGULATORY FLEXIBILITY ACT

The proposed actions would not have a significant economic impact on a substantial number of small entities. For purposes of this proposed action, the U.S. purse seine fleet in the ETP is categorized into two groups. There are 6-7 large vessels that are active most years. These are vessels larger than 363 mt carrying capacity. These vessels generally fish for tuna all year, though some time is occasionally spent outside the ETP. There also are 15-17 small vessels that fish most years; these are 363 mt carrying capacity or smaller. The large vessels are all categorized as large business entities as they each have landed tuna generating more than $3 million in gross revenue each year. The small vessels are small business entities generating less than $3 million in gross revenues each year from all landings. Only a portion of their gross revenues is derived from tuna, as these vessels only spend a portion of the year fishing for tuna in the ETP; they more often fish for coastal pelagic species off the West Coast.

The only action in the interim final rule that directly restricts small vessels (i.e., those 363 mt carrying capacity or smaller) is the formal prohibition of setting on dolphin. As a practical matter, however, these vessels have not set on dolphin in the past, largely because they do not have the physical capability to carry the needed equipment for successful fishing on dolphin. Therefore, this proposed action would have no impact on these vessels. There are no substantial compliance costs for small vessels. Similarly, unlike the paperwork burdens that would be imposed on large vessels, no such burden would be imposed on small vessels. Finally, while the proposed actions may result in increased supply of raw tuna to U.S. and foreign processors, it is not expected to result in lower prices being paid to fishing vessels, regardless of their size. Raw tuna for canning is a commodity for which the prices are generally set on an international basis. The prices paid for raw product are generally a result of cumulative international demand for and supply of raw product throughout the year. While the overall effect of the international dolphin conservation program may be to maintain or increase the long-term yield from the yellowfin tuna stock in the ETP (the annual yield could increase to 255,000 mt from the 1998 quota level of 225,000 mt), when considered in the context of total worldwide supply of over one million tons of raw tuna for canned light meat tuna, the incremental supply would not likely affect prices paid to fishing vessels. Thus, the proposed actions would not likely affect revenues to small or large U.S. tuna fishing vessels in the ETP.

Currently, there are three large U.S. processing firms and no small processing firms. Thus, there are no small business entities in this sector that would be affected by the proposed actions. With respect to the large U.S. processing firms, an increase in supply of raw tuna could increase yield-profitablity and benefit large processors. However, the potential amount of tuna harvested from large U.S. tuna purse seine vessels would likely not significantly affect the world supply of raw tuna for processing. NMFS is unable to predict the magnitude of this action on the large U.S. processing firms.

With respect to the wholesale and broker sectors, there are no known small U.S. firms involved in these sectors handling ETP-origin tuna or tuna products. U.S. processors sell to large food

distributors, grocery chains, and to other institutions and organizations usually in very large quantities. Such buyers and middlemen generally handle a large variety of products, of which canned tuna is only one. In any event, even if there were small entities involved in the business of brokering or wholesaling ETP origin tuna products, they would only minimally be affected by recordkeeping requirements (e.g., FCOs or certifications from processors that must accompany shipments of canned product) associated with tracking dolphin-safe tuna product. None of the other actions in this interim final rule would impose any costs nor affect revenues of such businesses.

Finally, while the proposed actions may result in an increased supply of raw tuna to U.S. and foreign processors, it is not expected to result in lower prices being paid to fishing vessels, regardless of their size. Raw tuna for canning is a commodity for which the prices are generally set on an international basis. The prices paid for raw product are generally a result of cumulative international demand for and supply of raw product throughout the year. This rule does not govern the international harvest levels of yellowfin tuna. However, the overall effect of the international dolphin conservation program (which the interim final rule addresses) may result in more fishing on dolphin and less on floating objects. This would be expected to maintain or increase the long-term yield from the yellowfin tuna stock in the ETP (the annual yield could increase to 255,000 mt from the 1998 quota level of 225,000 mt). When considered in the context of total Pacific Ocean supply of over 2 million tons of raw tuna for processing, the incremental supply of yellowfin tuna would not likely affect prices paid to fishing vessels. Thus, the proposed actions are not likely to significantly affect revenues to small U.S. tuna fishing vessels in the ETP.

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